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EXECUTIVE SUMMARY

In the consolidated Appropriations Act of 2004, Congress provided \$497,000 to the National Highway Traffic Safety Administration (NHTSA) to educate the motoring public on how to share the road safely with commercial motor vehicles (CMVs). The appropriation directed NHTSA to implement the effort jointly with the Federal Motor Carrier Safety Administration (FMCSA) and to apply lessons learned from NHTSA's experience in high visibility enforcement campaigns like *Click It or Ticket* to FMCSA's *Share the Road Safely* outreach program.

Washington State was selected as a pilot project site by FMCSA and NHTSA because of a successful local program developed by the Washington State Patrol (WSP) called *Step up and R.I.D.E.*. That project put a trooper in a commercial vehicle who called out risky behaviors by passenger vehicle (PVs) drivers to other troopers waiting on the freeway or on overpasses who then stopped and ticketed the driver. The WTSC was asked to do a field test of a combination of the *Step up and R.I.D.E.* program with the *Click It or Ticket* campaign directed at unsafe driving by any vehicle around commercial vehicles. WTSC named this pilot project Ticketing Aggressive Cars and Trucks (TACT).

WTSC first convened a Steering Committee to develop the TACT Pilot Project. Stakeholders who served on the Steering Committee included representatives from the National Highway Traffic Safety Administration Pacific Northwest Region, Federal Motor Carrier Safety Administration, Federal Highway Administration (FHWA), Washington State Patrol Commercial Vehicle Division, Washington Association of Sheriffs and Police Chiefs (WASPC) representing local law enforcement, the Washington Trucking Association (WTA), the Washington State Department of Transportation (WSDOT) Data Office and the Roadway Signage Office, and the Washington Traffic Safety Commission. Participants from WTSC included the Deputy Director, Research Investigator, Public Information Officer, Accountant, Project Manager, and Committee Assistant.

The Steering Committee recognized that the amount of money in the grant for this pilot project was insufficient for a statewide project. Therefore, the Committee decided to limit the project to four high crash corridors, two to be used for media and enforcement (intervention corridors) and the other two to function as controls.

The first data examined was provided by the WSDOT Data Office showing roads where there were a high number of collisions between PVs and CMVs. However, because of the experiences of other Committee members, additional factors were taken into account in corridor selection, including:

1) Determining the cost of the media markets in the intervention corridors. There was additional concern that media efforts might spillover into a control corridor and affect attitudes in control corridors.

2) Identifying intervention corridors where aircraft could assist and where there were wide enough shoulders on the roads to make a safe traffic stop.

3) Identifying roadways with existing data that showed the number of PV/CMV crashes, the number of unmarked vehicle citations for aggressive driving, and the number of single CMV crashes that were caused by others.

4) Identifying road conditions, such as the number of lanes, areas where trucks were not permitted in the left lane, and roadways where no construction projects were planned during the enforcement/evaluation sections of the project.

The WTSC Research Investigator analyzed WSDOT Data Office data to identify the ten corridors where the most collisions occurred. The most current data, from 2002, was broken into ten-mile sections of all state highways. Each ten-mile section itemized the number of collisions involving CMVs, the average daily traffic, and, where available, the percentage of CMVs involved in that traffic. The "top ten" locations were then thoroughly discussed by the Steering Committee at a meeting in November 2004 and a selection was made using the criteria listed.

The Committee selected I-5 south of the City of Tumwater (Thurston County) to the SR-512 exchange south of the City of Tacoma (Pierce County) and I-5 from the City of Stanwood through the southern part of the City of Bellingham (Skagit and Whatcom Counties) as the two intervention corridors. For convenience, the Skagit/Whatcom corridor will be referred to as "intervention corridor #1" and the Thurston/Pierce corridor as "intervention corridor #2".

Control corridors selected were on I-5 from the City of Kalama through the vicinity of State Route 506 ("control corridor #1) and I-90 just west of the City of Spokane to the vicinity of the Maple Street exit in the City of Spokane ("control corridor #2").

Although state routes were also considered for intervention/control corridors, the Steering Committee preferred to stay with corridors on the interstates because the greatest number of collisions occurred on those roadways, because the interstates have very heavy use by commuters, and because the WSP has primary jurisdiction on those roads. The troopers of WSP were also familiar with commercial vehicle issues, aggressive driving, and collision data collection, which made them an important partner in this project.

Because there were several unsafe behaviors by PV drivers around CMVs, one of the initial challenges was to determine which behavior was most dangerous for the PV driver. The Steering Committee first looked at several years' worth of citation data (and anecdotal evidence from the trucking industry representative and from experienced law enforcement on the Committee) to determine the type of behavior that the campaign should enforce. After examining existing citation data,

the Committee determined that “cutting off trucks” was the unsafe behavior to target in the TACT pilot project. Thus, the main objective of the public awareness activities was to increase awareness among PV drivers of the need to leave one car length for every ten miles of speed when merging in front of trucks. This message was used both for safety and to avoid getting a ticket; the message was also extended to include CMV drivers who “cut off” PVs and other CMVs.

The most vital communications goal identified by the Steering Committee was to reduce the incidence of PVs “cutting off” CMVs; therefore, the message needed to communicate to PV drivers that they should leave more space when merging in front of CMVs. Other messages about driving safely around CMVs were also a part of the communications efforts and were communicated to the public through an aggressive public relations campaign to get news media pickup of the story. Likewise, messages to CMVs to drive safely around PVs were included in this broader public relations effort.

Media experts estimate that people are exposed to over 2,500 advertising messages each day. In Seattle, radio stations often play up to twelve commercials in a row. In order for the TACT pilot project messages to be noticed by drivers, the public service announcement needed to stand out in this sea of other advertising and be memorable.

The media work began with an intercept survey to gauge public attitudes and awareness levels about driving around CMVs. One hundred people were contacted about their attitudes about CMVs and about leaving one car length for every ten miles of speed when merging in front of CMVs. This survey determined that 42% of motorists self-reported that they leave three or fewer car lengths at 60 mph when merging in front of CMVs, even though they see themselves as safe drivers.

The intercept survey findings underscored anecdotal evidence from law enforcement and the trucking industry that “cutting off trucks” was a widespread habit of PV drivers. In the first intercept survey, a road sign visual was also shown to respondents to determine their reaction to it. Building on this feedback, the road sign visual was further refined and tested with a second 100-person intercept survey to ensure that the road sign met its communications objectives. The objectives for the road sign visual required that the road sign was readable at speeds of 60 to 70 MPH; that the sign communicated to PV drivers that they needed to leave more space when merging in front of CMVs; and, that the pilot project included extra law enforcement patrols thereby increasing their chance of getting a ticket.

The results of the second intercept survey told us our road sign visual was meeting our communications objectives. The Steering Committee then decided upon a public service announcement for radio broadcast in the intervention corridors that would get the message out in a catchy and memorable way.

The PSA aired between July 5 and September 20, 2005. In the Seattle media market, the seventeenth largest in the United States, the PSA obtained a 45%

reach (912,100 people). The radio stations in the smaller markets of the intervention corridors had less reliable reach and frequency data, but all of the major radio stations were purchased with PSAs that ran 45 times Monday through Friday during major drive times (6:00 a.m. through 7:00 p.m.). In the Seattle media market, bonus media was also negotiated. The bonus media aired during the same time slots as the paid media schedule. The negotiations netted a total of 6,033 media PSA placements with 986 of those placements in Seattle. The remainder were in the intervention corridors.

In addition to radio placements, newspaper ads were carried in the major daily newspapers of the intervention corridor areas, as well as in the Fort Lewis Army base papers. Print ads ran between six and ten times in these papers.

The best exposure to the message of the TACT pilot project came from the use of sixteen road signs. Eight were erected in each of the two intervention corridors, four southbound and four northbound per corridor. The WSDOT's in-pavement traffic counters on the interstates show that approximately 180,000 motorists travel the two interstates each day. The evaluation results, discussed below and the three 100-person intercept surveys that followed the last enforcement wave determined that the sixteen road signs were the reason many motorists were aware of the TACT pilot project's message, to leave more space when merging in front of CMVs. Because the road signs will remain up for one year following the end of the project (until the end of September 2006), they may continue to generate behavioral changes in the PV drivers in the areas of the intervention corridors.

Three tractor trailers were wrapped head to toe with the TACT campaign visuals. These CMVs traveled the intervention corridor areas from the beginning of the project in July 2005. Trucking company officials volunteered more trucks for wrapping but public information funds were insufficient to take advantage of their offer. The trucks served as a visual testimony to the public of the trucking industry's support for this project.

Posters, banners and flyers were developed and distributed as part of the publicity effort. Flyers were handed out by law enforcement during all traffic stops as an educational tool for the project. Posters were erected in 112 businesses in the area of the intervention corridors, in stores, gas stations, restaurants, government offices, and grocery stores. Thirty-one banners were put up in and outside of public buildings.

Using the *Click It or Ticket* model for the TACT project meant that media began in the intervention corridors on the Monday following the July Fourth holiday weekend and continued through the end of enforcement, the last week of September. Thus media ran prior to and during the two enforcement waves. There was no media and no enforcement in the control corridors.

Initially, the Steering Committee planned to have three waves of enforcement in each of the intervention corridors. Those waves would have

occurred in April, July, and September 2005. These months were selected because weather in Western Washington State is generally good enough then for the use of the WSP Aviation Unit during the enforcement periods. The April wave was dropped when it became apparent that media and road signs could not be completed by that date.

Time and days for enforcement were determined by WSP troopers who conducted the original Washington *Step up and R.I.D.E.* program and by those troopers who were familiar with the intervention corridors. Their reports indicated that most CMV/PV collisions occurred during week days and in the morning commute and lunch hours. Thus the July wave was set for two weeks, Monday through Friday, July 11-22, 2005, from 6:00 a.m. to 2:00 p.m. The September wave used the same days and hours and ran from September 19-30, 2005.

Once the dates for the enforcement waves were established, the WASPC member of the Steering Committee contacted local law enforcement agencies that had jurisdiction on the stretches of I-5 in the intervention corridors to see if they wanted to or were able to participate in the TACT project with the WSP. Ultimately, the Whatcom and Skagit County Sheriffs' Offices and the Bellingham Police Department worked with WSP in intervention corridor #1. The Lakewood and Lacey Police Departments worked with WSP in intervention corridor #2.

Prior to the enforcement waves, a WSP trooper met with representatives of each participating local agency to discuss techniques of working on the freeways and to provide consistency in reporting violations.

An unanticipated benefit of the TACT project was the camaraderie that developed between members of the state and local law enforcement agencies.

Also prior to the enforcement waves, the Project Director discussed the project with the court clerks of the affected courts whose offices would likely see an increased volume of tickets due to the TACT pilot project. The clerks were provided with written details about the project. Because the Steering Committee had met with a member of the Administrative Office of the Courts, the tickets written during the project were not stamped or identified in any way with the TACT project; this was the preference of the judges from the affected courts.

Enforcement was conducted with law enforcement riding in CMVs provided by the trucking industry, with aviation, and with both marked and unmarked patrol vehicles. Although the original plan called for only trained WSP troopers to ride in the CMVs, by the end of the second enforcement wave, local law enforcement also served in that capacity.

During each day of each enforcement wave in each intervention corridor, the trucking industry provided a CMV and driver to traverse their corridor during enforcement times. Intervention corridor #2, for logistical reasons, requested an additional CMV and utilized two CMVs in that corridor during both enforcement waves.

WSP troopers rode in the CMVs, equipped with video cameras and mobile radios, and documented the violations they observed around CMVs by PVs and around CMVs and PVs by CMVs. When the troopers saw a violation, they called out the violator to either other troopers or to local law enforcement waiting in their patrol cars on the shoulder or off-ramp. That trooper/officer then pursued the violator and issued the ticket.

WSP has an unmarked vehicle unit that it uses for aggressive driving enforcement (ADAT – aggressive driving apprehension team). Members of the ADAT also took part in the TACT pilot project. In addition, local law enforcement agencies that had access to unmarked units successfully used those vehicles in the project. These unmarked vehicles were driven by uniformed law enforcement and operated independently of the troopers in the trucks. Law enforcement in unmarked units were able to effectively observe and cite drivers of both PVs and CMVs who were driving aggressively in the intervention corridors. They were also able to respond to violations observed by law enforcement riding in the trucks or to aviation troopers, if not otherwise engaged.

The WSP Aviation Unit was used in the intervention corridors to locate aggressively driven PVs and CMVs. The trooper observing the violations from the air radioed the violation to the ground troopers/officers waiting in their patrol cars in the intervention corridors. Use of WSP Aviation was dependant upon weather and visibility and upon prior commitments for the use of the aircraft. Participating law enforcement rated aircraft use as the single most effective enforcement tool during the project.

A total of 4,737 contacts with drivers were made during the two enforcement waves. On average there were 237 contacts per day over the twenty days of TACT enforcement. The vast majority of contacts resulted in a citation being issued (72%) while 28% resulted in warnings. Also, the majority of contacts were with PV drivers, 86%; 14% were with CMV drivers. Most drivers were male, 73%, and the average age was 51.6 years old. Most of the drivers contacted were residents of western Washington (28% lived in the vicinity of intervention corridor #1, 21% in intervention corridor #2, and 22% lived in other western WA communities). Very few drivers were from eastern Washington (less than 1%), while many were from Canada (13%) and other states (15%). The numbers of driver contacts were roughly equally distributed across days of the week. The most productive times of the day were during the morning commute hours (between 7am and 8am, 17%).

The evaluation design was a comparison of two intervention corridors with two control corridors at multiple time periods including pre-project baseline, during each of the media-enforcement waves, and after completion of the project. The same types of data were collected for each of the four project corridors. This type of project attempts to alter driver behavior by conveying information on the correct way to perform and by creating general deterrence of illegal actions through a heightened fear of an enforcement sanction. The effectiveness of the effort will therefore depend to some degree on the extent to which the intended audiences

receive the message and perceive an increased risk of enforcement. It also depends on whether the information is understood and recalled at the time when the correct, legal behaviors must be performed—in this case when the driver interacts with a CMV on the highway. Project success must also be related to the ability of the driver to actually carry out the advice. For example, can PV drivers adequately judge that they have allowed sufficient distance after passing a CMV before they pull back in?

In order to evaluate TACT fully and fairly, the project was measured at various points in the intervention process. Input to the project was provided by the extent to which informational materials were distributed and the number of citations written by law enforcement. The next measurement point was the determination of the extent to which this input was actually received by the intended audience. This was measured by a survey of exposure, knowledge and self-reported behavior.

In order to determine whether behavior changed and violations around CMVs declined, observations of vehicle interactions with CMVs on the highway were made. Also, it was of interest to determine if the residual violations—those that still occurred after the TACT pilot project—had changed in nature or severity. It was certainly possible that exposure to the TACT messages and the fear of a ticket prompted drivers to behave better even though their actions still constituted a violation of the law. This was assessed through ratings of behaviors observed before and after the TACT intervention.

Thus, the approach was to measure to the extent possible the effects of the TACT program from distribution of the countermeasures through the actual behavior of the intended audience on the road. In this manner, it was possible to document not only the success or failure of the program but also how the process performed as the intervention unfolded.

The evaluation approach was implemented using a design that measured before to after shifts in key measures of effectiveness at the two treated or intervention corridors and contrasted them to similarly derived measures collected at two untreated or control corridors. This is a relatively powerful evaluation design because it assesses pre to post changes at the intervention corridor sites while simultaneously determining if those changes might possibly have occurred naturally without the TACT intervention at the control corridor sites.

First, a public awareness survey determined whether the intended audience was exposed to the TACT program and recalled its content. This was followed by the analysis of the violation rates before and after the TACT pilot project enforcement waves. Then, the results of the assessment of the change in the nature of the violations themselves were analyzed. Finally, an additional survey to examine the possible spillover of the TACT countermeasures into control corridor #1 was conducted.

Overall, the evaluation shows a consistent picture of the TACT pilot project effectiveness. The countermeasures were perceived and recalled by a significant proportion of the intended audience. There was a reduction in both violation rates and in the seriousness of the remaining violations.

Thus the TACT pilot project achieved its objectives and was successful in altering behavior in the desired direction in the intervention corridors.

FINAL REPORT
WASHINGTON STATE TRUCK SAFETY PROJECT
TACT – Ticketing Aggressive Cars and Trucks

INTRODUCTION

In the consolidated Appropriations act of 2004, Congress provided \$497,000 to NHTSA to educate the motoring public on how to share the road safely with commercial motor vehicles. The appropriation directed NHTSA to implement the effort jointly with FMCSA and to apply lessons learned from NHTSA's experience in high visibility enforcement campaigns like *Click It or Ticket* to FMSCA's Share the Road Safely outreach program to educate drivers to drive safety around large trucks.

Washington State was selected as site for a pilot project because of a successful local program by the Washington State Patrol in Seattle called *Step up and R.I.D.E.*. The local project (also familiarly called the "Trooper in the Truck") put a trooper in a commercial vehicle who called out risky behaviors by passenger car drivers to other troopers waiting on the freeway or on overpasses or on-ramps who then stopped and ticketed the driver for unsafe driving behaviors. The project came to the Washington Traffic Safety Commission (WTSC) as a field test of a combination of the *Step up and R.I.D.E.* program with the *Click It or Ticket* high visibility enforcement campaign directed at unsafe driving by any kind of vehicle around large trucks. WTSC named this pilot project *TACT*, Ticketing Aggressive Cars and Trucks.

BACKGROUND

The purpose of the TACT pilot project was to increase awareness by the driving public about dangerous behaviors around moving commercial motor vehicles (CMVs). This Final Report shows that the project increased the number of citations issued for dangerous CMV-related behaviors by drivers of both CMV and passenger vehicles (PV); developed a research-based safety campaign that reduced unsafe driving behaviors around CMVs; and tested the *Click It Or Ticket* behavior change model in the truck crash problem area.

PROJECT GOALS

Goal 1: To document a decrease in unsafe driving behavior around CMVs by CMV and PV drivers through the use of media, road signs, and other communications that measure driver awareness of unsafe behaviors. The specific driving behavior targeted was cutting off CMVs. Other behaviors targeted were tailgating, speeding, and aggressive driving.

Goal 2: To test the use of the high visibility enforcement model in high crash areas to determine the impact in reducing the high-risk driving behaviors that contribute to CMV crashes.

Goal 3: To test the combined effectiveness of education, outreach and enforcement for violations occurring in the proximity of CMVs.

Goal 4: To develop a model that is replicable in other states.

Stakeholders who served on the Steering Committee for this project included representatives from the National Highway Traffic Safety Administration Pacific Northwest Region (NHTSA), Federal Motor Carrier Safety Administration (FMCSA), Federal Highway Administration (FHWA), Washington State Patrol Commercial Vehicle Division (WSP), Washington Association of Sheriffs and Police Chiefs (WASPC) representing local law enforcement, the Washington Trucking Association (WTA), the Washington State Department of Transportation (WSDOT) Data Office and the Roadway Signage Office, and the Washington Traffic Safety Commission (WTSC). Participants from WTSC included the Deputy Director, Research Investigator, Public Information Officer, Accountant, Project Manager, and Committee Assistant.

The Steering Committee met monthly from October 2004 through October 2005. In late January 2006, the Committee met two additional times, to receive preliminary oral briefing on the evaluation results and later to respond to queries from the U.S. General Accounting Office. The Steering Committee is now disbanded.

The Steering Committee recognized from the beginning that the amount of money in the grant for this project was insufficient for a statewide project. Therefore, the Committee decided to limit the project to four high crash corridors, two to be used for media and enforcement and the other two to function as controls.

The first data examined was provided by the WSDOT Data Office showing roads where there were a high number of collisions between PVs and CMVs. However, because of the experiences of other Committee members, additional factors were taken into account in corridor selection, including:

1) Determining the cost of the media markets in the intervention corridors. There was concern that media efforts might spillover into a control corridor and affect attitudes in control corridors.

2) Identifying intervention corridors where aircraft could assist and where there were wide enough shoulders on the roads to make a safe traffic stop.

3) Identifying roadways with existing data that showed the number of PV/CMV crashes, the number of unmarked vehicle citations for aggressive driving, and the number of single CMV crashes that were caused by others.

4) Identifying road conditions, such as the number of lanes, areas where trucks were not permitted in the left lane, and roadways where no construction projects were planned during the enforcement/evaluation sections of the project.

The WTSC Research Investigator analyzed WSDOT Data Office data to identify the ten corridors where the most collisions occurred. The most current data, from 2002, was broken into ten-mile sections on all state highways. Each ten-mile section itemized the number of collisions involving CMVs, the average daily traffic, and, where available, the percentage of CMVs involved in that traffic. The "top ten" locations were then thoroughly discussed by the Steering Committee at a meeting in November 2004 and a selection was made using the criteria listed.

The Committee selected I-5 south of the City of Tumwater (Thurston County) to the SR-512 exchange south of the City of Tacoma (Pierce County) and I-5 from the City of Stanwood through the southern part of the City of Bellingham (Skagit and Whatcom Counties) as the two intervention corridors. For convenience, the Stanwood/Bellingham corridor will be referred to as "intervention corridor #1" and the Tumwater/Tacoma corridor as "intervention corridor #2".

Control corridors selected were on I-5 from the City of Kalama through the vicinity of State Route 506 and I-90 just west of the City of Spokane to the vicinity of the Maple Street exit in the City of Spokane. For convenience, the City of Kalama corridor will be referred to as "control corridor #1" and the City of Spokane corridor will be referred to as "control corridor #2".

Although state routes were also considered for intervention/control corridors, the Steering Committee chose corridors on the interstate system because more collisions occurred there and because the interstates have very heavy use by both commuters and CMVs. In addition, the WSP has primary jurisdiction on the interstates. WSP troopers are familiar with CMV issues, aggressive driving enforcement, collision data collection, and the *Step up and R.I.D.E.* program, which made them a key partner in the pilot project. Local law enforcement along the intervention corridors also participated in the pilot project.

One of the initial challenges was to determine which behavior was most dangerous for PV and CMV drivers. The Steering Committee looked at several years of citation data (and anecdotal evidence from the trucking industry representative and from experienced law enforcement on the Committee) to determine the type of behavior that the campaign should address. Once the Committee determined that "cutting off trucks" was the unsafe behavior to target in the campaign, the main objective of the public awareness activities was to increase awareness among PV drivers about the need to leave one car length for every ten miles of speed before merging in front of trucks. This message was used both for safety and to avoid getting a ticket; it was also used to get the attention of CMV drivers who cut off PVs and other CMVs.

PROJECT DESCRIPTION

The project components consisted of media and enforcement interventions and a detailed evaluation. The interventions are described in this section. The design and results of the evaluation are covered in the next section.

Media

The goals of the public awareness campaign were: to research, develop, and refine a message that, when heard or seen by drivers, communicated that the project was aimed at both PV drivers and CMV drivers and that increased enforcement was involved to reduce unsafe driving around CMVs.

A communications goal identified by the Steering Committee was to reduce the incidence of PVs “cutting off” CMVs; therefore, the message needed to communicate to PV drivers that they needed to leave more space when merging in front of CMVs. Other messages about driving safely around CMVs were part of the communications efforts and communicated to the public via a vigorous public relations campaign to get news media to pickup the story (earned media). Likewise, messages to CMVs to drive safely around PVs were included in this broader public relations effort.

Another goal of the public awareness campaign was to develop a media message that aired on local television, radio, and print outlets and to develop a public service announcement.

Media experts estimate that people are exposed to over 2,500 advertising messages each day. In Seattle, Washington, radio stations often play up to twelve commercials in a row. In order for the TACT message to be noticed by drivers, the message needed to stand out from the other advertising, be memorable, and get to the public repeatedly.

Intercept survey. A 100-person intercept survey was conducted to gauge public attitudes and awareness levels about driving around CMVs and leaving one car length for every ten miles of speed when merging in front of CMVs. This survey determined that 42% of motorists self-reported that they leave three or fewer car lengths at 60 mph when merging in front of CMVs, even though they see themselves as safe drivers.

The survey findings underscored anecdotal evidence from law enforcement and the trucking industry that cutting off trucks was a widespread bad habit of PV drivers. In the first intercept survey a road sign visual was shown to respondents to gauge their perceptions about it. Building on this feedback, the road sign visual was further refined and tested with a second 100-person intercept survey to ensure that it met its communications objectives and that drivers could read the road sign while traveling at speeds of 60 to 70 MPH. The road sign communicated to drivers that they needed to leave more space when merging in front of CMVs and that the extra law enforcement patrols would increase their chance of being ticketed.

Radio message. A high quality Seattle advertising company, Mark Jones Advertising, was commissioned to develop a radio advertisement that was professional, that contained the correct message, and that was unique enough to be able to cut through the media clutter. The public service message was to leave more space when merging in front of CMVs. (See Appendix A for words to PSA)

Radio air buy. A Seattle air buying firm was commissioned to determine which radio stations to purchase advertising spots for the radio air buy and to negotiate to obtain additional free air time placements as part of this purchase agreement.

The radio message aired between July 5 and September 20, 2005. In the Seattle media market, the 17th largest in the United States, the PSA obtained a 45% reach, which is another way of saying that 912,100 people heard the messages. The radio stations in the smaller markets of intervention corridors #1 and #2 had less reliable reach and frequency data, but all of the major radio stations were purchased with spots that ran 45 times Monday through Friday during major drive times (6:00 a.m. through 7:00 p.m.). In the Seattle media market, \$94,110 was spent with an additional \$79,782 worth of bonus media negotiated in that market. In intervention corridors #1 and #2, the media budgets totaled \$100,315 and the value of the bonus media was \$103,495. The bonus media aired during the same time slots as the paid media schedule. Altogether the media budget was \$200,000 and the bonus air time negotiated added another \$183,277 for a total air buy value of \$377,702. The negotiations netted a total of 6,033 media radio placements with 986 of those in Seattle and the remainder in intervention corridors #1 and #2. (See Appendix A)

In addition to radio placements, newspaper ads were carried in the major daily newspapers of both intervention corridors, as well as in the Fort Lewis Army base papers. Print ads ran between six and ten times in these papers. See Appendix A for a sample of the print ad.

Public relations. An aggressive and successful public relations campaign accompanied this effort. A press event with participation by the TACT Steering Committee kicked off the campaign. The event took place at the Nisqually truck weigh station north of Olympia within intervention corridor #2. (See Appendix A for photograph of press event)

News coverage of the campaign was carried in the major daily newspapers in the intervention corridors and in Seattle. The campaign was covered by five news stories, four editorials and numerous letters-to-the-editor. In addition, two weekly newspapers carried the story, as well as a trucking industry publication, and a magazine and electronic newsletter reaching the 520,000 Triple AAA members in Washington (See Appendix A for letters-to-editors that ran in January, 2006.)

Television coverage was extensive with eight TV stations in the Seattle and the area of intervention corridor #1 carrying the story. Five of those stations

carried the story more than once. (See Appendix D for a list of the stations that carried the story).

Radio station news coverage was carried on sixteen stations, ten of them in the Seattle media market. News coverage and live, on-air interviews were conducted with WSP troopers involved with the project. An interview of WTSC Director Lowell Porter was carried on a satellite radio channel reaching five million subscribers. (See Appendix A for a complete list of radio coverage.)

Road sign. The most remembered exposure to the message of the TACT pilot project came from the use of sixteen road signs. Eight were erected in each of the two intervention corridors, four southbound and four northbound per corridor. The road signs will remain in place for one year after the project has ended (until the end of September 2006). (See Appendix A for a visual of the road sign)

Wrapped CMVs. Three CMVs, one each from Gordon Trucking, Interstate Transport and Bates Technical College, were wrapped with the TACT pilot project campaign visuals. These CMVs traveled the intervention corridor areas from the beginning of the enforcement waves in July 2005. Trucking company officials volunteered more trucks to be wrapped but public information funds were insufficient to take advantage of their offer. The trucks served as a visual testimony to the public of the trucking industry's support for this project and served as a public awareness message on wheels.

Posters, Banners and Flyers. Posters, banners and flyers were developed and distributed as part of the publicity effort. Flyers were handed out by law enforcement during all traffic stops as an educational tool for the project. Posters were erected in 112 businesses in the areas of the intervention corridors, in stores, gas stations, restaurants, government offices, and groceries. Thirty-one banners were put up in and outside of public buildings. (See Appendix A for visual of poster, flyer and banner)

Presentations. Presentations about the TACT pilot project were presented to thirteen groups and conferences by members of the TACT Steering Committee. (See Appendix A for a complete listing.)

Using the *Click It or Ticket* model for the TACT pilot project meant that media began in both intervention corridors on the Monday following the July Fourth 2005 holiday weekend and continued through the end of enforcement, the last week of September 2005. Thus media ran prior to and during the two enforcement waves. There was no media and no enforcement in either control corridor.

Enforcement

Initially, the Steering Committee planned to have three waves of enforcement in each of the intervention corridors. Those waves would have occurred in April, July, and September 2005. These months were selected because weather in Western Washington State is generally good enough then for the use of

the WSP Aviation Unit during the enforcement periods. The April wave was dropped when it became apparent that media and road signs could not be completed by that date.

Time and days for enforcement were based on the original Washington *Step up and R.I.D.E.* program, by those troopers who were familiar with the intervention corridors and by crash data that showed that most CMV/PV collisions occurred during week days during the morning commute and lunch hours. Thus the July wave was set for two weeks, Monday through Friday, July 11-22, 2005, from 6:00 a.m. to 2:00 p.m. The September wave used the same days and hours and ran from September 19-30, 2005.

The local law enforcement agencies that had jurisdiction on the stretches of I-5 in the intervention corridors were invited to participate in the TACT pilot project with the WSP. The Whatcom and Skagit County Sheriffs' Offices and the Bellingham Police Department participated in the project in intervention corridor #1 while the Lakewood and Lacey Police Departments worked with WSP in intervention corridor #2. Prior to the enforcement waves, a WSP trooper met with representatives of each participating local agency to discuss techniques of working on the freeways and to provide consistency in reporting violations.

An unanticipated benefit of the TACT pilot project was the camaraderie that developed between members of the state and local law enforcement agencies while working together.

Prior to the enforcement waves, the Project Director discussed the project with the court clerks whose offices would likely see an increased volume of tickets due to the TACT pilot project. The clerks were provided with written details about the project. Because the Steering Committee had met with a member of the Administrative Office of the Courts, the tickets written during the project were not stamped or identified in any way with the TACT pilot project; this was the preference of the judges from the affected courts.

Law enforcement rode in CMVs provided by the trucking industry and were supported by aviation, and marked and unmarked patrol vehicles who made the actual traffic stops. Participants were law enforcement members of both state and local agencies.

During each day of each enforcement wave in each intervention corridor, the trucking industry provided a CMV and driver to traverse their corridor during enforcement times. Intervention corridor #2, for logistical reasons, requested an additional CMV and two CMVs were utilized in that corridor during both enforcement waves.

WSP troopers rode in the CMVs, equipped with video cameras and mobile radios, and documented the violations they observed around CMVs by PVs and by CMVs. When the troopers saw a violation, they identified the violator to either another trooper or to a local law enforcement officer or deputy waiting in his/her

patrol car on the shoulder or off-ramp. That trooper or officer pursued the violator and issued the ticket.

Although the original plan called for only trained WSP troopers to ride in the CMVs, by the end of the second enforcement wave, local law enforcement also served in that capacity.

WSP has an unmarked vehicle unit that it uses for aggressive driving enforcement. This unit is called the aggressive driving apprehension team (ADAT). Members of the ADAT took part in the TACT pilot project. In addition, local law enforcement agencies that had access to unmarked vehicles successfully used those vehicles in the project. These unmarked vehicles were driven by uniformed law enforcement and operated independently of the troopers in the trucks. Law enforcement in unmarked vehicles were able to effectively observe and cite drivers of both PVs and CMVs who were driving aggressively in the intervention corridors. They were also able to respond to violations observed by law enforcement riding in the trucks or to aviation troopers, if not otherwise engaged.

The WSP Aviation Unit was used in the intervention corridors to locate aggressively driven PVs and CMVs. The trooper observing the violations from the air radioed to the ground troopers and officers waiting in their patrol cars in the intervention corridors. Use of WSP Aviation was dependant upon weather and visibility and upon prior commitments for the use of the aircraft. Participating law enforcement rated aircraft use as the single most effective enforcement tool during the project.

Citation Data. A total of 4,737 contacts with drivers were made during the two enforcement waves. On average there were 237 contacts per day over the twenty days of TACT enforcement. The vast majority of contacts resulted in a citation being issued (72%) while 28% resulted in warnings. Also, the majority of contacts were with PV drivers, 86%; 14% were with CMV drivers. Most drivers were male, 73%, and the average age was 51.6 years old. Most of the drivers contacted were residents of western Washington (28% lived in the vicinity of intervention corridor #1, 21% in intervention corridor #2, and 22% lived in other western WA communities). Very few drivers were from eastern Washington (less than 1%), while many were from Canada (13%) and other states (15%). The numbers of driver contacts were roughly equally distributed across days of the week. The most productive times of the day were during the morning commute hours (between 7am and 8am, 17%). (See Appendix B for summary of citation data)

EVALUATION

The evaluation design was a comparison of two intervention corridors with two control corridors at multiple time periods including pre-project baseline, during each of the media-enforcement waves, and after completion of the project. The same types of data were collected for each of the four project corridors.

Approach and Design

The TACT program included an extensive evaluation component conducted both by the WTSC and by Dunlap and Associates, Inc. of Stamford, Connecticut under a task order agreement from the National Highway Traffic Safety Administration (NHTSA). This section first discusses the evaluation approach and design and then presents the specific methods and results for each of the evaluation measures.

Approach. As described earlier, the TACT program consisted of enforcement and education interventions applied in two locales or road corridors—Bellingham and Lacey. In programs of this type, the objective is to alter driver behavior by conveying information on the correct way to perform and by creating general deterrence of illegal actions through a heightened fear of an enforcement sanction. The effectiveness of the effort will therefore depend to some degree on the extent to which the intended audiences receive the message and perceive an increased risk of enforcement. It will also depend on whether the information is understood and recalled at the time when the correct, legal behaviors must be performed—in this case when the driver interacts with a semi truck on the highway. Program success will also be related to the ability of the driver to actually carry out the advice. For example, can drivers adequately judge that they have allowed sufficient distance after passing a semi truck before they pull back in?

In order to evaluate TACT fully and fairly, it was necessary to measure its effects at various points in the intervention process. Discussions earlier in this report covered the extent to which information materials were distributed and the number of citations written by law enforcement. Those can be thought of as the “input” to the program. The next measurement point was the determination of the extent to which these inputs were actually received by the intended audience. This was measured by a survey of exposure, knowledge and self-reported behavior.

The determination of whether driver behavior changed and violations around semi trucks declined was accomplished using observations of vehicle interactions with semi trucks on the highway. Also, it was of interest to determine if the residual violations—those that still occurred after the TACT program—had changed in nature or severity. It was certainly possible that exposure to the TACT messages and the fear of a ticket prompted drivers to behave better even though their actions still constituted a violation of the law. This was assessed through ratings of behaviors observed before and after the TACT intervention.

Thus, the approach was to measure to the extent possible the effects of the TACT program from distribution of the countermeasures through the actual behavior of the intended audience on the road. In this manner, it was possible to document not only the success or failure of the program but also how the process performed as the intervention unfolded.

Design. The evaluation approach was implemented using a design that measured before to after shifts in key measures of effectiveness at the two treated or “intervention” locations—Bellingham and Lacey—and contrasted them to similarly derived measures collected at two untreated “comparison” sites—Kelso and Spokane. This is a relatively powerful evaluation design because it assesses pre to post changes at the treated sites while simultaneously determining if those changes might possibly have occurred naturally without the TACT intervention at the comparison sites.

Results. The presentation of evaluation results below follows the steps in the intervention process. First, a public awareness survey determined whether the intended audience was exposed to the TACT program and recalled its content. This is followed by the analysis of the violation rates before and after the TACT intervention. Then, the results of the assessment of the change in the nature of the violations themselves are presented. Finally, an additional survey to examine the possible spillover of TACT countermeasures into the Kelso comparison site is discussed. For each evaluation step, the data collection methods are presented first followed by a summary of the most meaningful results.

Overall, it will be seen that the evaluation shows a consistent picture of TACT program effectiveness. The countermeasures were perceived and recalled by a significant proportion of the intended audience. There was a reduction in both violation rates and in the seriousness of the remaining violations. This leads to the conclusion that the TACT program achieved its objectives and was successful in altering behavior in the desired direction in the test corridors.

Specific Evaluation Methods and Results

Exposure and Knowledge Survey

A public awareness survey was the method selected to determine if the TACT education and enforcement countermeasures were received and understood by the intended audience of drivers. In order to obtain an unbiased sample of all drivers in the two intervention and two comparison areas of interest, The WTSC conducted a paper-and-pencil survey in cooperation with the Washington State Department of Licensing (DOL). Four DOL license offices servicing the areas of interest—Bellingham, Kelso, Lacey and East Spokane—served as sampling sites. The Bellingham and Lacey offices were the only ones in close proximity to the intervention corridors on which countermeasures were being applied. Kelso also had only a single DOL office. Spokane has multiple DOL offices. The East Spokane DOL office was selected to represent this comparison locale because of its size and closeness to the highway on which the behavioral measures were taken.

Four cycles or “waves” of survey data were collected in each office. Each wave covered approximately two weeks. The data collected in Wave 1 represented the baseline or “before” data since they were collected prior to the implementation of the TACT countermeasures and media campaigns. Subsequent waves were collected during the initial period of countermeasure activity, just after the peak of the countermeasures and after countermeasures had been in place for several months.

The survey process represented a low burden on both the respondents and the office staff. DOL agents in each office handed copies of the one-page, 16-item survey instrument (see Appendix C) to licensed drivers and asked them to complete the information while they were waiting for their driver license or other transaction to be completed. Respondents either handed the completed survey back to the DOL employee or dropped it in a designated box. At the end of each wave, the completed questionnaires were sent to Dunlap and Associates, Inc. for key entry and analysis.

Overall, 6,155 people responded to the survey in the four DOL offices. The primary purposes of this survey were to determine if people in the intervention sites had been exposed to and remembered the media and enforcement campaigns and whether they reported that they changed their behavior in response to the countermeasures. For analysis and presentation purposes, data were combined into intervention and comparison groups and pre and post campaign periods. Thus, Lacey and Bellingham were aggregated to form the intervention sites, while Kelso and Spokane were combined as the comparison sites. The pre exposure period consisted of Wave 1 of the survey which was conducted between May 3 and May 14, 2005. The post campaign period was comprised of Waves 2-4 collected during July 19 – 30, 2005, August 16 – 27, 2004 and September 20 – October 1, 2005, respectively.

Demographics. Demographic information included age, gender, ethnicity, annual mileage and type of vehicle driven most often. Demographics characterize the people who responded to the survey and are checked to assure that generally the same types of people completed the survey in each of the waves. There were no noteworthy differences in these demographic variables among the various waves. Based on anecdotal reports from the managers of the DOL offices used for the survey, the survey sample appeared to be a reasonable representation of the driving public in the areas around the various offices.

Safety Belt Use and Other Driving Habits. Because of the general interest in safety belt use and as a further method of characterizing the survey sample, respondents were asked how often they used their safety belts when driving. Approximately 93% of all respondents said that they “always” use their safety belt. This is consistent with the Washington statewide observed safety belt use.

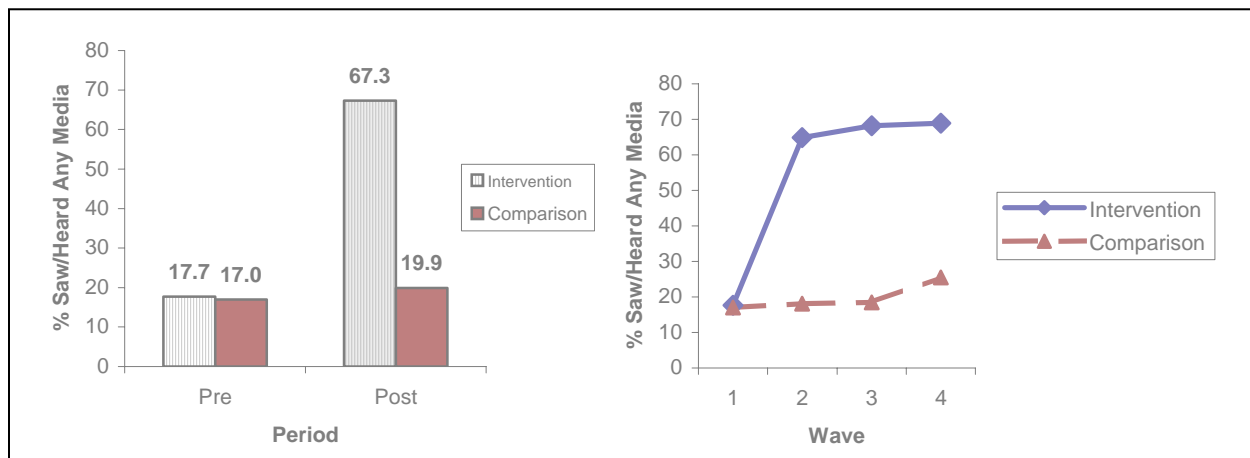
Basic information regarding driving habits, such as type of car driven most often and miles driven per year, was also collected. No remarkable patterns were seen within the driving habits information. Of particular interest was the fact that relatively few (1.3% in the total sample) of the respondents drove a semi truck as their most frequent vehicle. Thus, it is a reasonable conclusion that the survey sample was relatively naïve with respect to the operational characteristics and limitations of a semi truck.

Media Exposure. The media and enforcement campaigns were successful in creating meaningful exposure levels among drivers at the intervention sites. Based on the total sample, the percentage of people saying that they heard or saw something that was clearly related to TACT increased significantly from 17.7% in the pre period to 67.3% in the post period at the intervention sites (Chi Square = 924.851, $p < 0.001$, $N = 3,828$).¹ There were no significant changes at the comparison sites, where percentages stayed low (17.0% pre and 19.9% post, N.S.). Figure 1 presents a graphical representation of the exposure results for pre and post periods as well as by wave. Exposure levels jumped from Wave 1 to Wave 2 and remained at the higher level throughout the subsequent waves of data collection.

It is not surprising that approximately 17% of the respondents reported exposure in the pre period. The specific question asked was *"Have you recently read, seen or heard anything about giving semi trucks more space when you pass them?"* This prompt is sufficiently general that it can be expected that some people will respond in the affirmative. This could be based on hearing some other recent highway safety message or simply on traffic safety messages remembered from any time in the past. It also could be the result of trying to give what they perceived to be the "correct" answer. Regardless of the origin of the baseline values, however, the change in reported exposure to messages about leaving more room for semi trucks is large and clearly only at the intervention sites. This demonstrates that the TACT media exposure was reaching its intended audience of licensed drivers and that they recalled the messages when prompted.

¹ Statistical significance was tested using the Chi Square statistic which is a measure of association. Chi Square analyses examined the actual versus expected frequency of responses at intervention and comparison sites or between pre and post periods. A pre to post or intervention to comparison effect was considered statistically significant if the probability that it could have arisen by chance as calculated from the Chi Square statistic was less than 5% ($p < 0.05$). In the remainder of this section, significant associations are reported together with their Chi Square value and the associated exact probability that they could have arisen by chance. Differences that were not significant by the Chi Square test are simply listed as "(N.S.)" or reported as not significant when described. The sample size or "N" value on which each Chi Square is based is also shown when the results are reported as percentages.

Figure 1. Percentage who saw/heard media about giving semi trucks space



Since the TACT program resulted in high exposure, it was of interest to determine which forms of media were most successful in reaching the public. The survey asked where a person had seen or heard the information about driving behavior around semi trucks. Choices included newspaper, radio, TV, road sign, brochure, police, billboard, poster and banner. The media campaign had engaged in all of the above methods of information dispersion, with the exception of using billboards. However, billboard was included in case people thought that the large road signs constituted billboards.

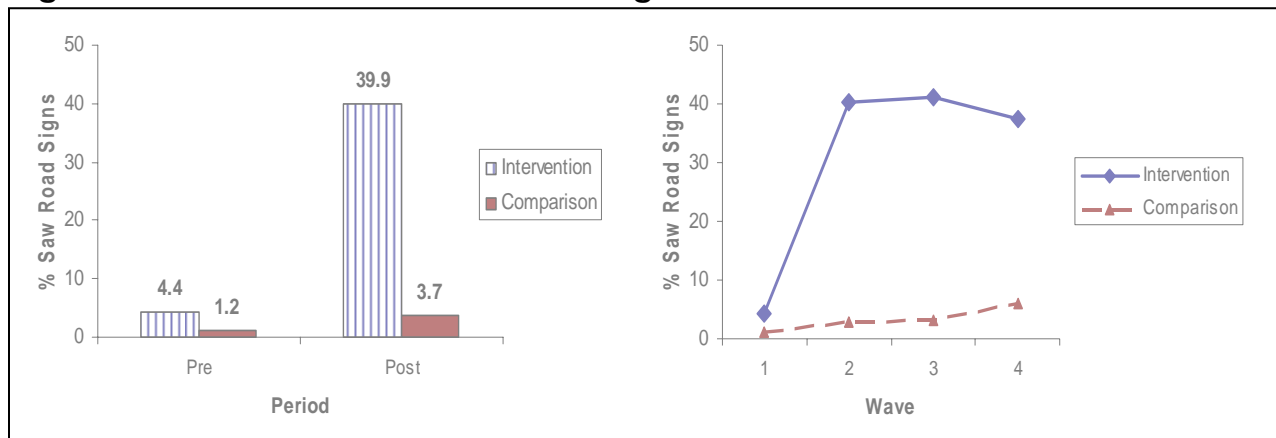
Five of the media forms showed a statistically significant and operationally meaningful increase in the percentage of people who said they had heard or seen the message via that particular medium. These media forms were road signs, billboards, radio, television and newspapers. Although billboards and road signs separately showed a significant exposure, their data were combined since it is virtually certain that people responding with respect to billboards were actually making reference to the large road signs. As seen in Figure 2, the percentage of people seeing the signs in both the intervention and comparison groups increased significantly from the pre to post periods.² However, the increase for the intervention sites was substantially higher. Out of all of the people surveyed at the intervention sites, only 4.4 % in the pre period reported seeing road signs/billboards, while nearly 39.9% in the post period reported seeing them (Chi Square = 634.631, $p < 0.001$, $N = 3,828$). A dramatic increase is seen between Wave 1 and Wave 2 at the intervention sites and remains steady between Waves 2 and 3, with a small drop-off between Waves 3 and 4.

At the comparison sites, 1.2% of all people surveyed in the pre period said they saw the signs, while nearly 3.7% in the post period claimed to have seen the

² All of the percentages reported for the survey are based on the total number of respondents. This includes everyone who did not see any of the media (about one third of the sample). If the percentages had been based only on those respondents who indicated they had been exposed to some TACT campaign component, the percentages would have been higher. As presented, the results are the best estimate of the extent of the total intended audience that each media form reached.

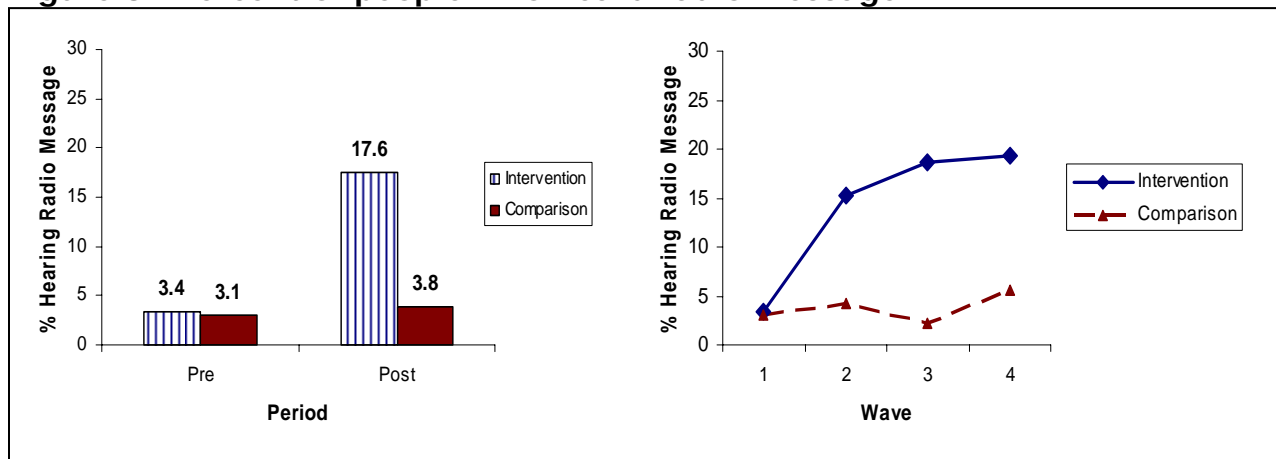
signs (Chi Square = 15.142, $p < 0.001$, $N = 2,327$). Although statistically significant, the magnitude of the increase in exposure at the comparison sites is not operationally meaningful compared with the large jump at the intervention locations. The wave-by-wave data in Figure 2 reveal that exposure increased for comparison sites at a steady rate across waves but still remained well below the levels of exposure seen at the intervention sites. Also, virtually all of the increase at the comparison sites came from Kelso. Since Kelso is relatively close to Lacey and on the same I-5 corridor, Kelso residents might have been exposed to the signs near Lacey. In order to investigate this possibility, a follow-up intercept survey was mounted. Its results are reported later in this report.

Figure 2. Percent who saw the road sign



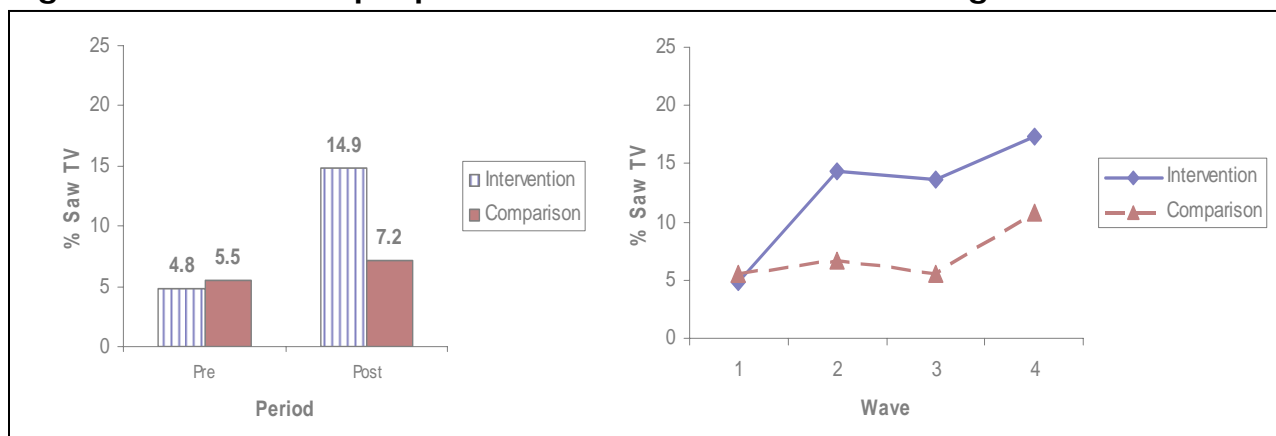
Exposure to the radio message at the intervention sites followed a pattern involving a large initial increase between Waves 1 and 2 and smaller increases between Waves 2, 3 and 4, while exposure at the comparison sites remained low and fairly constant (See Figure 3). Respondents at the intervention sites reporting having heard the radio message showed a significant and operationally meaningful increase in exposure rising from 3.4% in the pre period to 17.6% in the post period (Chi Square = 183.673, $p < 0.001$, $N = 3,828$). There was low exposure to radio at the comparison sites and no significant change from pre to post. This clearly suggests that the radio messages were effective.

Figure 3. Percent of people who heard radio message




Exposure to the earned media on television followed a similar pattern to the radio messages (See Figure 4). Respondents at the intervention sites who said they saw a message on television showed a significant and operationally meaningful increase in exposure rising from 4.8% in the pre period to 14.9% in the post period (Chi Square = 100.00 $p < 0.001$, $N = 3,828$). The primary increase was once again between Waves 1 and 2, with a smaller increase at the intervention sites between Waves 3 and 4. There was low exposure to messages on television at the comparison sites and no significant change from pre to post, although by Wave 4 there does appear to be a small increase in exposure.

Figure 4. Percent of people who saw the television messages



The survey also showed an increase in exposure to the newspaper materials at the intervention sites, however the change was not as large as for the other media forms (See Figure 5). Exposure rose from 3.9% in the pre period to 9.4% in the post period (Chi Square = 42.90 $p < 0.001$, $N = 3,828$). The increase occurred between Waves 1 and 2, and exposure levels remained steady through the subsequent waves. There was low exposure to the newspaper placements at the comparison sites and no significant change from pre to post.

Figure 5. Percent of people who saw the newspaper messages



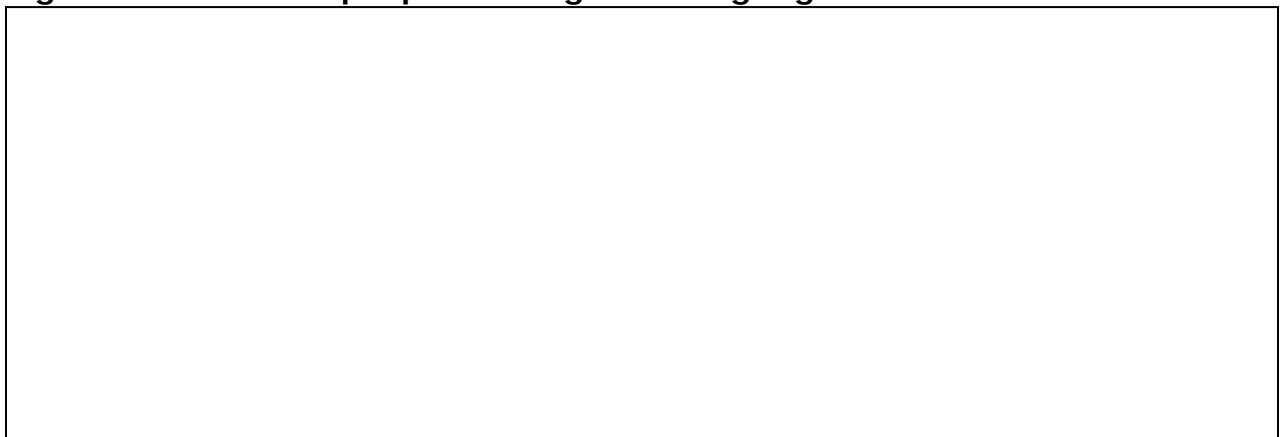
The other media, including brochures, banners and posters showed no meaningful increase in reported exposure for the intervention or comparison sites over time. It is interesting that the radio messages, which were well produced and carefully distributed with paid media, did not produce as large an exposure increase as did the road signs. It is possible that this is an artifact of the survey process. Respondents were given a list of media forms and asked to check all that they had seen or heard. Some people, however, may only have checked the one form they remembered first or only those media that they had been exposed to most recently or most repeatedly. The road signs had the ability to produce many repeated exposures especially for anyone commuting along the I-5 corridor near Lacey or Bellingham. Thus, they may have been the most compelling presentation of the TACT message due to repetition and because they presented the TACT message at the point of behavior for drivers.

These results demonstrate delivery of messages of this type is clearly possible. Results presented below also suggest that these messages were successful in altering driver behavior in the desired direction. In addition to the signs, the radio messages also could serve as a point of behavior countermeasure, since many people listen to the radio in their automobile while driving. However, there is likely a greater chance for more repetitions of exposure to the road signs than the radio message because the road signs are stationary and people have to pass them every time they drive in the treated highway corridor. The radio message had to compete with a myriad of other spots on the chosen radio stations.

Recall of Program Name. After determining that people indeed experienced increased exposure to the message of giving semi trucks more space when passing, it was also of interest to determine whether people remembered the name of the program. The official program name of Ticketing Aggressive Cars and Trucks (TACT) was virtually unknown in both the intervention and comparison sites. Only 1.5% of respondents in both the pre and post periods at the intervention sites, and 1.3% and 2% for the pre and post periods, respectively, at the comparison sites, said they knew the name TACT as a program relating to safety around semi trucks. This is not surprising since the name was purposely not publicized as part of the program and therefore served as a distractor question in the survey.

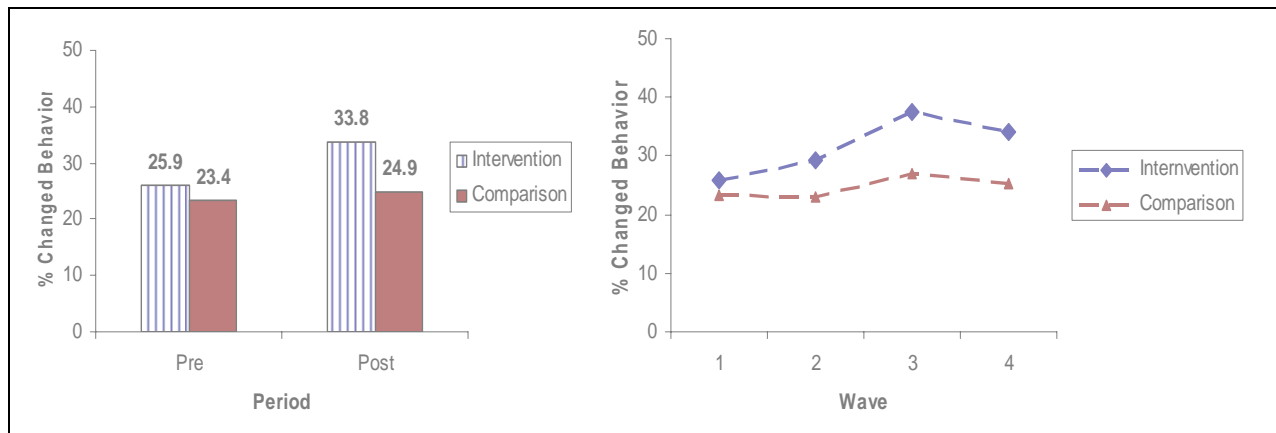
A much larger percentage of people said that the names “Give Big Rigs Big Space” and “Leave Room When Passing” were programs that did pertain to safety around semi trucks. Although these were not the actual program names, they are central themes in the TACT messages, especially on the road signs and in the radio messages. If these three names are combined for purposes of analysis, there is a significant increase in recall for the intervention sites but not for the comparison sites (Figure 6). Awareness went up from 14.2% in the pre period to 40% in the post period for intervention sites (Chi Square = 302.345, $p < 0.001$, $N = 3,828$). Similar to results discussed earlier, a large jump in exposure is seen between Waves 1 and 2 with a smaller increase between Waves 3 and 4. There was no significant change at the comparison sites.

Figure 6. Percent of people naming TACT/Big Rig/Leave Room



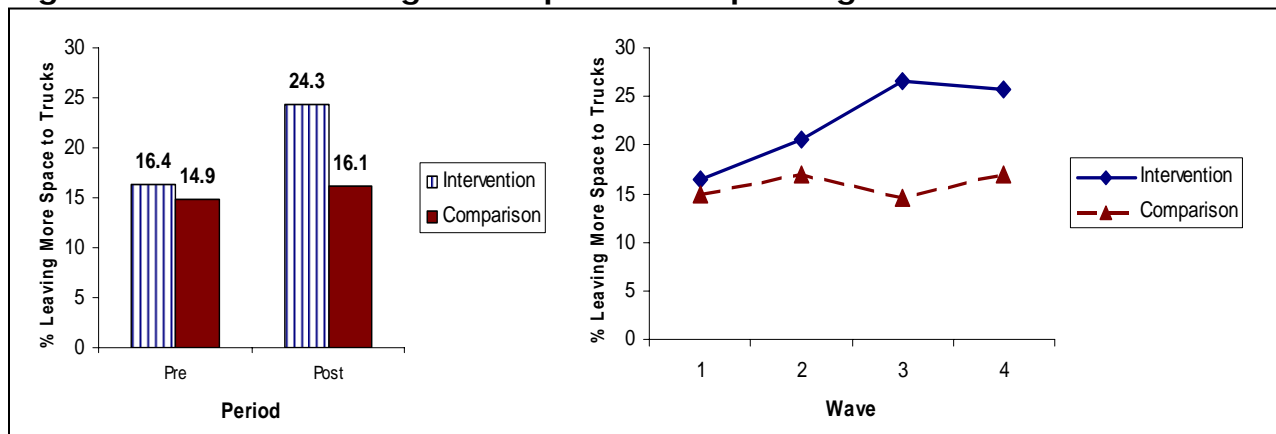
Self-reported Behavior Change. Since the survey confirmed that much of the driving population in the intervention sites had been exposed to the TACT message, it was of interest to examine the extent to which this exposure affected the target behaviors. The survey asked people to self-report if they had changed their driving behavior around semi trucks in the past two months. Results indicated that significantly more people reported having changed behavior in the last two months during the post period than the pre period for the intervention sites, but not for the comparison sites. People reporting that they changed behaviors rose from 25.9% to 33.8% at the intervention sites (Chi Square = 27.382, $p < 0.001$, $N = 3,828$). Figure 7 demonstrates the gradual increase at the intervention sites across Waves 1, 2 and 3, with a minor reduction during Wave 4. Comparison sites showed virtually no change across the four waves.

Figure 7. Percent who said they changed behavior in last 2 months



Of the three choices presented for changes in behavior, the one selected most frequently was *"I leave more space when passing."* As shown in Figure 8, respondents reporting that they left more space when passing rose significantly from 16.4% in the pre period to 24.3% in the post period at the intervention sites (Chi Square = 35.431, $p < 0.001$, $N = 3,828$). Increases are seen at Waves 2 and 3 that level off at the higher level during Wave 4. There was no significant pre/post change at the comparison sites. The other two survey responses of *"I don't follow as closely"* and *"I stay out of the truck driver's blind spots"* showed no significant change between pre and post periods for either the intervention or comparison sites. These results are consistent with the TACT campaign's message, particularly as presented on the road signs and in the radio message.

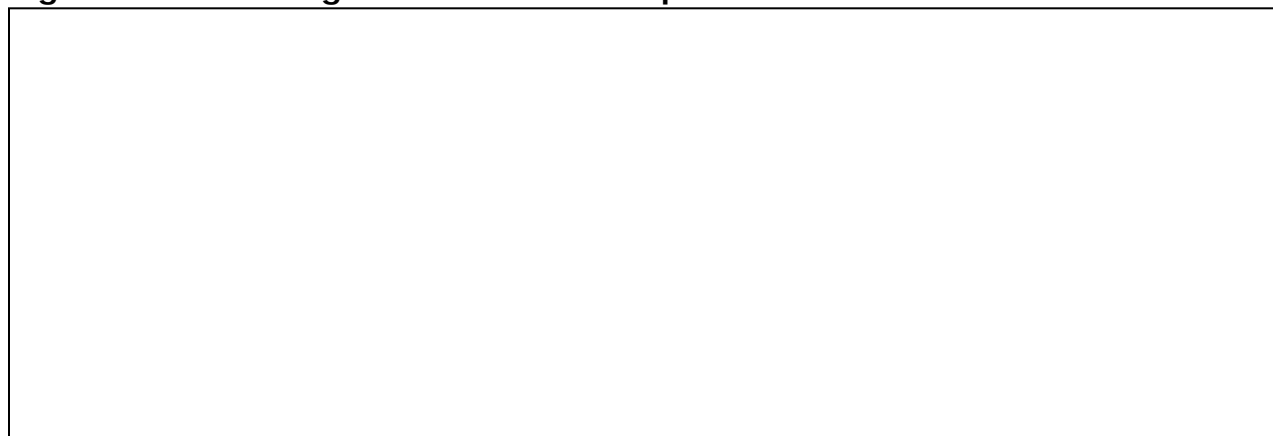
Figure 8. Percent leaving more space when passing semi trucks



Another way to measure possible self-reported behavior change in response to the TACT interventions is with respect to specific actions when passing semi trucks and cars. Separate survey items asked people to indicate how many feet or car lengths they left when they passed a car and when they passed a semi truck. Based on the response provided, a ratio of semi truck to car distance was computed to determine if people left less, the same, or more space when passing semi trucks

than when passing cars. A significant increase in the number of people saying they left more space for trucks than for cars was found at the intervention sites with percentages rising from 58.5% in the pre period to 68.0% in the post period, (Chi Square = 31.323, $p < 0.001$, $N = 3,310$).³ The increase is slow and steady at Waves 2 and 3 and levels off at Wave 4. Comparison sites showed no significant change. As shown in Figure 9, these results provide further support that people self-reported that they were leaving more space for trucks after exposure to the TACT campaign. As will be seen later, these self reports were confirmed by the observational data.

Figure 9. Percentage who leave more space for semi trucks than for cars.



Strictness of Enforcement. Respondents were also asked how strictly they thought the Washington State Patrol (WSP) enforces unsafe driving around semi trucks. Analysis showed a significant increase in the percentage of respondents at intervention sites saying that they thought the WSP enforcement was somewhat strict to very strict. Percentages went from 52.2% in the pre period to 56.4% in the post period (Chi Square = 5.907, $p = 0.015$, $N = 3,422$). Overall, more respondents at comparison sites (approximately 61%) thought that enforcement by the WSP was strict, but the percentage did not change significantly from pre to post.

Another item asked if the respondent had ever been stopped by the police for tailgating or cutting off a semi truck. The number of “yes” responses was extremely small at all sites, and no significant effects were found.

Summary of Survey Results. Overall, the DOL public awareness survey demonstrated that people at the intervention sites were seeing or hearing the TACT materials and remembering the core message of leaving more space when passing trucks. Interestingly, in the present study road signs were the best method of relaying the TACT safety messages to drivers, with radio ads also effective but a distant second. This is not surprising since both media types are point of behavior countermeasures, and drivers likely have more repeated exposures to the road

³ Note that N is based on the number of people who provided viable data for analysis. Missing or uninterpretable responses were eliminated.

signs than to the radio spots. A noteworthy fact is that people reported changing their behaviors around semi trucks, especially when it comes to leaving more space when passing. Results also indicated that people at the intervention sites felt that the WSP was being stricter about unsafe driving around semi trucks after the TACT program was implemented. Whether this perception came from the publicity about increased enforcement or the higher visibility of the WSP cannot be determined from the survey. Overall, the DOL survey results certainly suggest that both the media and enforcement campaigns had the desired effects on exposure and self reported behaviors.

Violation Rates Near Semi Trucks

The DOL survey showed that people had been exposed to the TACT campaign and that they said they had changed their behaviors around semi trucks. In order to determine if any true changes in behaviors were occurring around semi trucks, actual driving behaviors around semi trucks were observed. This resulted in the conclusion that actual violation rates were reduced in the intervention sites but not in the comparisons.

Video Data Collection. In order to acquire a sufficiently large sample of vehicle interactions with semi trucks, it was decided to follow semi trucks and video the behavior of drivers passing or otherwise interacting with them. The WSP patrol agreed to assign officers to 8-hour shifts of following semi trucks in unmarked cars equipped with video equipment. A protocol was developed to define how the observations were to be made and the judgments desired from the troopers on the scene. WSP troopers were then assigned at each of the four sites and trained to collect data according to the protocol. Data were collected using video equipment mounted on the dashboard and looking to the front of the unmarked cars. Collection took place in five waves at each of the intervention and comparison corridor sites. Although each data collection day consisted of eight hours of patrol time, the actual recorded time varied significantly due to external factors such as the availability of semi trucks, compelling needs for the troopers to take enforcement action and equipment malfunctions.

Officers were requested to move in or out of the lane behind the semi truck when possible in order to allow the video cameras to obtain images about vehicle behaviors before, during and after passing the trucks. This information included signaling in and out of lanes, time for lane changes, and action after passing (e.g., slowing down, accelerating, space left). Officers were asked to identify any violations around the semi trucks or violations committed by the trucks themselves using the audio channel on the video recorders. The primary violations officers looked for were speed, improper lane change, failure to signal, following too closely, reckless driving and negligent driving 2nd degree. As part of the data collection, officers were asked to verbalize what action they would take regarding the vehicle's actions, although they were requested not to stop vehicles unless absolutely necessary. The three possible actions when there was a violation included 1) no stop, 2) driver would be stopped and warned, and 3) driver would be ticketed. The measure of primary interest was whether the rate of violations

(number of violations per unit of observation time) decreased. Rates had to be used rather than raw numbers of violations since the amount of observation time per wave at each site varied quite markedly due to the extraneous factors mentioned above.

Video Coding. Video data were sent by the WSP to the WTSC where they were copied for protection and then forwarded to Dunlap and Associates for coding and analysis.

A total of approximately 160 hours of video was collected (8 hours x 4 sites x 5 waves). Violation sequences were then extracted from the video based on the visual and auditory information provided by the troopers. Overall, 1,843 interactions were coded from the video data. The total number of interactions coded includes all instances when an officer indicated a violation in the immediate vicinity of a semi truck, or when a vehicle and a semi truck's paths crossed. If vehicle and semi paths crossed without a violation, an event was recorded as a "no violation" interaction. Instances when vehicles simply drove by, did not commit a violation and did not cross paths with the semi truck were not coded.

For each relevant sequence, a wide array of information was coded based on trooper comments, environmental conditions and observed vehicle behavior including vehicle type, signaling in or out of lanes, position relative to semi, number of highway lanes, and weather conditions. Although 1,843 interactions were coded, an interaction was only classified as a violation based on the comments of the troopers.

Violation Rate Results. Several minor issues arose involving the quality of video data. The audio in all of Wave 4 for Lacey was lost. Therefore, the coder made judgments as to the nature of any indicated violations (officers gave a visible signal to the camera when a violation occurred). Also, one and a half tapes of data were lost in Wave 3 for Lacey due to an equipment malfunction. These issues were addressed with analysis techniques described below in the results.

As in the analysis of the DOL survey, site data were combined based on intervention or comparison condition and by pre and post periods. The analyses were conducted based on violation rates per hour of observation. These rates were used to test for changes before and after the TACT program and between intervention and comparison sites using the Poisson log linear offset procedure described in Agresti (2002) and as implemented in SPSS® Version 13 (2004). This technique weighs and adjusts the observed counts for differences in exposure.⁴ In

⁴ The Poisson log linear procedure is a complex statistical approach that will not be described here. The approach is based on the assumption that the distribution of the counts and rates among the cells follows a Poisson distribution. Although usually a reasonable approximation, this assumption is often not completely valid in analyzing count data; instead one frequently encounters moderate "over-dispersion" in which the variance exceeds the mean. A sensitivity analysis was therefore performed using various levels of assumed over-dispersion. It was found that even if the actual variances were twice as large as those of the Poisson distribution, the program effects observed here would still be highly significant ($P < .01$). In simple terms, this means that any threats to the validity of employing this approach are extremely small.

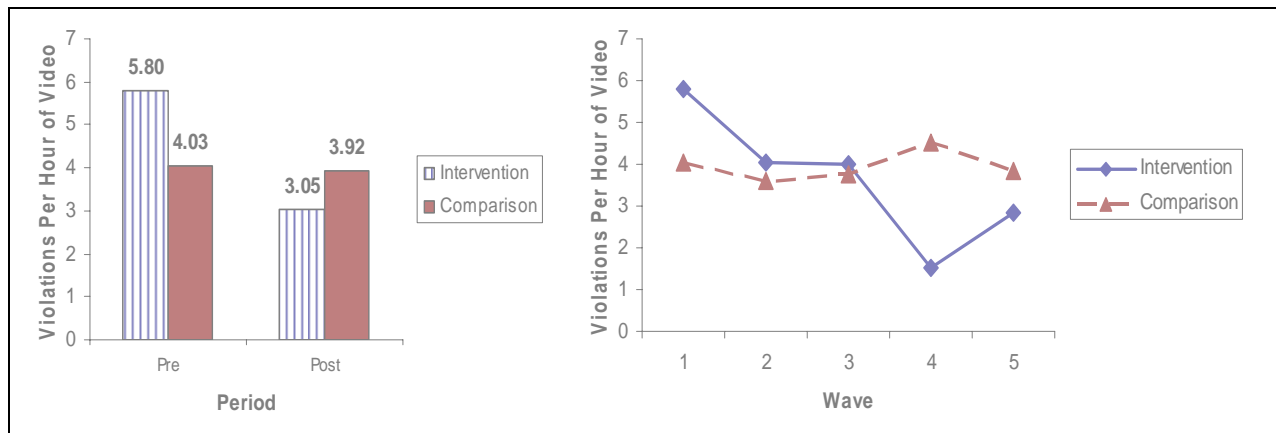
the present study, exposure is represented by the amount of time (hours) over which each cell count (number of violations for a wave and site) was observed. The analysis, therefore, addresses whether or not the enforcement program was associated with change in the rate of violations.

The analysis is similar in concept to an analysis of variance with the intervention factors of site type (intervention/comparison) and period (pre-TACT/post-TACT). The effects of most interest were whether there was a significant reduction in violation rate pre to post and whether that reduction was significantly more at the intervention sites, i.e., the interaction effect of site type by period was statistically significant. The results of the analysis demonstrated a significant interaction effect (regression coefficient = 0.615, $p = 0.002$) in the predicted direction.⁵ Calculating the odds ratio (OR = 1.85) indicates that the comparison group had 1.85 times as many violations per hour than did the treatment group when controlled for their respective rates in the pre-period. Using the reciprocal of the OR, an alternative way of describing the findings, indicates an approximately 46% reduction in violations for the intervention sites when controlled for the pre period rates.

Given that the effect is significant, a simpler way to examine it is by looking at the calculated rates of violations for the pre and post periods for the intervention and comparison sites. As seen in Figure 10, the rate of violations for the intervention sites decreases from 5.8 violations per hour of observation for the pre period to 3.05 violations per hour of observation for the post period. Dramatic drops in the violation rate are seen between Waves 1 and 2 and again between Waves 3 and 4. The intervention sites then show a small increase in violation rate between Waves 4 and 5. Comparison site violation rates stay virtually the same from pre to post with rates of 4.03 and 3.92 respectively.

⁵ The results for period and site are not of major interest in the context of the present study but they must be included in the model in order to calculate the interaction. The coefficient for group represents the difference between the intervention and comparison areas on the pre- and post-period rates combined. The coefficient for period represents the difference between the pre and post period for intervention and comparison areas combined. The component of primary interest is the site by period interaction. This interaction reflects the impact of the enforcement program on subsequent violation rates by examining changes in the pre vs. post rates between the intervention and comparison groups.

Figure 10. Rate of violations per observation hour



In order to bound the magnitude of the violation rate reduction observed after the TACT intervention, a second analysis was conducted excluding the pre period data and looking at intervention and comparison sites across each of the remaining post period waves. The same Poisson log linear offset procedure described earlier was used for the wave 2, 3, 4 and 5 data. As expected, the analysis resulted in a smaller but highly significant treatment effect (regression coefficient = -0.262, $p = 0.01$). The difference between intervention and comparison sites was significant, but none of the differences among the waves reached significance. The odds ratio ($OR = 1.30$) indicates that the comparison sites had approximately 1.30 times as many violations in the final four waves (the post period waves) as the intervention sites. Using the reciprocal of the OR indicates a 23% reduction in violations for the intervention sites. This result is conservative since it does not take into account the difference in violations at baseline. However, the results including the baseline presented above based on the treatment by period interaction could possibly be inflated somewhat since there is only one wave for the pre-period and there are four for the post. The best estimate is therefore that the actual violation rate reduction lies somewhere in the interval 23%-46%.

Summary of Violations Results. Overall, these results suggest that there was a significant reduction in the rate of violations at the intervention sites from the pre to post periods but not at the comparison sites. The reduction in violations per observation hour is indicative of an overall reduction in the number of violations at the intervention sites. Combined with the data from the DOL survey, it can be concluded that people were receiving and understanding the TACT messages and responding to the messages and increased enforcement by changing their behaviors in the desired way around semi trucks.

Seriousness of Violations

The final step in the process of determining changes in the behaviors of drivers after the implementation of the TACT program involved rating the "goodness/badness" of behaviors observed in the videos. As discussed earlier,

analyses of the rates of violations showed that a reduction in the number of violations occurred at intervention sites. It was also of interest to determine if the nature of the residual violations had changed at the intervention sites. The characteristics of the residual violations were important to shed light on the reductions obtained. For example, the lowered numbers of violations could have been a result of the elimination of the least egregious behavior or a general reduction of all violations regardless of their seriousness. Also, it is possible that people receiving the TACT message responded in the desired direction but did not change sufficiently to avoid a violation altogether. These questions were addressed by having raters review violation sequences on video to assess their characteristics.

Violation Rating Data Collection. The same video data used to assess the rates of violations were used to determine if any changes occurred in the nature of violations before and after the TACT campaign. Ninety-nine video segments containing a driver violation were randomly selected out of the pool of all possible violations in which a semi truck and another vehicle interacted.⁶ Violations from which the random sample of 99 was drawn included those where the driver cut off a semi truck, followed too closely, failed to signal, improperly changed lanes, drove negligently⁷ or drove recklessly.

The interest was in changes in the nature of violations at the intervention sites only because the DOL survey showed little or no penetration of the TACT intervention into the comparison sites, and there was no change in their violation rates. Thus, any observed change in the nature of their violations could not have been associated with the TACT activities.

The total of 99 video segments was composed of 50 segments of video containing a violation in which a semi truck and another vehicle interacted that were randomly selected from the post period at the intervention sites. In addition, 49 segments of video containing a violation in which a semi truck and another vehicle interacted were taken from the pre period. Since there were not a sufficient number of non-speeding violations at the intervention sites in the pre period to provide the 49 video segments, the sample was composed of violation data from both the intervention and comparison sites. It was initially thought that it was reasonable to combine violations from the intervention and comparison sites for the pre period since neither could have been influenced by the TACT program. This assumption proved invalid when analyses showed that pre-TACT ratings of violations at the intervention sites were quite different from ratings of violations at the comparison sites (see results below for a discussion of this point).

In each video segment, a single interacting vehicle was designated by an arrow superimposed on the video presentation. Raters were instructed to rate each segment with respect to both the behaviors of the driver of the vehicle designated by the arrow and those of the semi truck drivers. The video segments were rated on the crash risk, intent, legality, intimidation, and aggressiveness of the driver of

⁶ The sample size of 99 was chosen because that is the upper limit of the number of menu entries that can be conveniently placed on a DVD, the medium selected to present sequences to the raters.

⁷ Negligent driving 2nd degree as determined by the observing trooper.

the interacting vehicle using four 5-point scales (see Appendix D for the rating instructions and rating form). Participants also answered a summary question characterizing the designated vehicle driver's behavior as being not a problem, a lapse, an error, or an intentional violation. Participants also indicated whether or not a police officer should stop the driver of the designated vehicle. The semi truck driver's behaviors were only rated on aggressiveness, the same summary question and whether or not an officer should stop the semi truck.

Three groups of raters provided the data—six WSP officers, five semi truck drivers, and six members of the WTSC staff. Raters were given a three-ring binder that contained a DVD, instructions, and 99 rating forms—one for each violation. The order of the violation scenes was randomized between pre and post periods, and the timing of the violation was unknown to the raters. They then independently rated all 99 segments.

Video Rating Results. The rating data were analyzed with respect to reliability and differences between the pre and post intervention periods. Reliability is discussed first because it is a prerequisite to reaching valid conclusions about any changes in violation characteristics across periods.

Reliability analyses were conducted and demonstrated that all raters, and groups of raters, were using the scales similarly. Reliability analyses also demonstrated that items were highly inter-correlated for the designated vehicle and semi truck ratings, respectively. Items regarding the designated vehicle's behavior were initially created with the intent to measure different dimensions of behavior. However, factor analysis⁸ revealed that all of the items for the driver of the designated vehicle were actually measuring one dimension. This dimension appears to be related to the overall "goodness" or "desirability" of the behavior. As expected a separate dimension was found for the three items relating to behaviors of the semi truck drivers.

Rating data were further screened to determine if the assumption that the video segments in the pre period from the intervention and comparison sites were rated comparably and could therefore be combined in the analyses to determine pre versus post effects. Results indicated that the ratings of the pre period video segments for the intervention and comparison sites were significantly different on all of the items. For example, the mean rating of crash risk during the pre period for the intervention sites was significantly higher than the mean rating of crash risk for the comparison sites ($t[16] = 8.771, p < 0.001$). Mean ratings followed a similar pattern for all of the items, with violations at the intervention sites being rated "worse," suggesting that there were systematic differences between the intervention and comparison site violations observed on the videos for the pre period. Due to these findings, all of the remaining analyses included only ratings of the intervention site video segments for both the pre and post periods. The net effect of the elimination of the video segments from the comparison sites in the pre

⁸ Factor analysis is a statistical technique that examines the extent to which a group of questions or scales actually consists of "clusters" or "factors" measuring the same or similar things rather than as the set of discrete items scored by the raters.

period was a reduction in the sample size of violations entering the analysis. This in turn meant that a larger pre-to-post difference was needed for any effect to be deemed statistically significant.

After the screening process, the next step was to determine if any differences in ratings from the pre to post periods for the intervention site video segments occurred. Any differences in ratings would indicate a change in the nature of the violations that were occurring. As discussed earlier, if a difference were found, the nature of the residual violations would provide further information on the effects of the TACT program.

A Repeated Measures ANOVA was conducted for each survey item separately to determine if pre/post or group effects occurred in the ratings.⁹ Ratings of the designated vehicle drivers' behaviors indicated significant improvements between the pre and post periods as follows:

- Crash Risk was rated significantly lower in the post period ($F[1, 14] = 51.449, p < 0.001$)
- Behavior was rated as less intentional in the post period ($F[1, 14] = 14.099, p = 0.002$)
- Behavior was rated as less illegal in the post period ($F[1, 14] = 62.481, p < 0.001$)
- Behavior was rated as less intimidating in the post period ($F[1, 14] = 7.189, p = 0.018$)

In addition, the summary rating question indicated that behaviors were "better" and less likely to be a deliberate violation or major error in the post period ($F[1, 14] = 8.970, p = 0.01$). The question relating to whether the police should stop the driver also showed a positive effect indicating that the raters thought it was significantly less necessary for an officer to stop the designated driver in the post period ($F[1, 14] = 24.570, p < 0.001$).

No significant pre/post effect was found for ratings of aggression of the driver of the designated vehicle or any of the three ratings of the semi truck drivers' behaviors. No effects were expected for the ratings of the semi truck drivers' behaviors since the video sequences were selected to demonstrate violations by vehicles interacting with the semi trucks.

⁹ Repeated Measures ANOVA was used because each rater rated all of the video segments. Repeated Measures ANOVA considers any differences between the mean ratings of the pre and post period video segments for each rater and takes into consideration that these ratings came from the same individual. Essentially, each rater acts as his/her own comparison, and effects can therefore be attributed to the time period when the video segments were recorded without being confounded by variability among the raters. Between groups and interaction effects are also obtained; however, these effects are not of particular interest in the present study.

Some significant between subjects effects were found as a function of rater group. Truckers rated all video segments as significantly more intimidating and aggressive than the WSP troopers and WTSC staff. Also, the WSP troopers identified significantly more drivers of the designated vehicles as needing to be stopped by a police officer than the WTSC staff. None of these findings are surprising since truckers are more likely to be sensitive to driving behaviors that are intimidating and aggressive around semi trucks, and the patrol officers are more likely to be sensitive to which vehicles a police officer should stop.

Summary of Video Rating Results. Overall, the video rating task was successful in identifying differences in behaviors that were likely due to the TACT media and enforcement campaigns. Results indicated that violations were “not as bad” in the post period as they were in the pre period, suggesting another way in which the TACT intervention was successful. The combination of fewer violations and less severe residual violations indicates that the public was getting and acting on the messages the TACT program was publicizing. If violation rates are reduced and the residual violations are less severe, as indicated by the results, an additional safety benefit should be realized.

I-5 Corridor Intercept Survey

As discussed earlier, a follow-up intercept survey was conducted after the conclusion of the TACT program to determine the extent to which drivers in the Kelso I-5 corridor comparison site had been exposed to the TACT message. Survey results from the Kelso DOL office indicated a significant increase in the number of people reporting that they had seen or heard something about safety around semi trucks. Also, violation rates, as seen on the video recorded by troopers, dropped at the Kelso site from pre to post periods even though no increased enforcement or media had intentionally been implemented in the area. The focus of the intercept survey was therefore to determine if the TACT message had actually penetrated into Kelso.

The intercept survey was conducted at two sites, one at the Kelso rest area on the I-5 corridor in Kelso, and another at the Maytown rest area on the I-5 corridor near Lacey/Olympia. At each of these sites 100 drivers were surveyed by a WTSC contractor. Drivers were asked questions about where their trip began and would likely end, what type of vehicle they drive, how often they drive in the Olympia area, how often they listen to Olympia/Seattle radio stations, whether or not they knew any of the TACT messages and if they had seen the TACT road signs. See Appendix C for the complete intercept survey.

Intercept survey responses were analyzed to determine the extent to which people in the Kelso area were indicating that they had seen/heard the TACT message compared with people at the Maytown rest area. It was expected that people at the Maytown rest area would be aware of the TACT program because the rest area was so close to Lacey where TACT signs and radio messages had been deployed. The effect of interest was whether or not the possible routine

movements of the Kelso population along the I-5 corridor had exposed them to TACT, particularly the signs and radio messages.

Intercept Survey Results. Results indicated that there was a noteworthy spillover of the TACT message to drivers using the I-5 corridor around Kelso. No significant differences were found between the Maytown and Kelso rest area with regard to exposure to the TACT message. In this context, a non-significant difference suggests that people at the Kelso and Maytown rest areas were similarly exposed to the TACT messages. Similar percentages of respondents said that they heard the TACT message or saw the road sign. For example, 68% of the people at Kelso said they saw the road sign while 76% at the Maytown rest area said they saw the road sign. These results clearly demonstrated the power of the TACT message in reaching far beyond the intended target area. Kelso is 70 miles south of Lacey/Olympia and yet people were saying that they had been exposed to the TACT message.

Implications of the Intercept Survey Findings. There are several implications of the spillover of the TACT program into Kelso, a designated comparison site. From the standpoint of process, there is a lesson to be learned that interventions, particularly those along interstate highways, likely have a more far reaching effect than initially considered. When the TACT program was devised, it was reasonable to assume that most Kelso drivers would be isolated from the signs 70 miles to their north. In fact, mobility along the I-5 corridor seems to be greater than anticipated.

The effect of the receipt of countermeasures in Kelso was to suppress the magnitude of the positive shifts observed. In other words, categorizing Kelso as a comparison site when it displayed an intervention effect in the DOL survey and in violation rates made it less likely that a significant intervention/comparison difference would be detected.

Evaluation Discussion

The evaluation results provide a consistent picture of TACT effectiveness. Success was demonstrated at every step of the process—messages were received and understood; knowledge was changed in the intended direction; self-reported behavior improved and observed behavior confirmed the self reports. Thus, it is reasonable to conclude that the TACT intervention achieved its objectives and thereby improved safety in the intervention corridors.

The scope of the TACT program evaluation was broad and provided evidence that the process worked at each necessary step. Because the evaluation was limited in time, however, it provided little information concerning the likely persistence of the positive behavioral changes. The strong apparent effectiveness of the road signs, however, does suggest that there should be a continued effect as long as they are in place. Additional drivers will certainly be exposed to these signs over time, and repeated exposures will accumulate. Whether this results in habituation and forgetting or ignoring the message or ingraining it further in the

behavior pattern of drivers cannot be determined at this time. It is an interesting research question for a future effort.

The use and effectiveness of the road sign suggests the further exploration of this medium as a highway safety countermeasure. The WTSC used these signs for Click It or Ticket safety belt messages with documented success. Their impact with the TACT message further supports their efficacy. Certainly, theory suggests that the delivery of a safety message at or near the point of behavior for a driver should enhance its benefit, especially if they are portrayed as a sign erected by the state's highway department as opposed to an advertising message. It is unknown, however, how much the relatively novel nature of the TACT message contributed to the positive response to the signs.

Finally, it is not known to what extent fear of a citation, i.e., general deterrence produced by the TACT countermeasures, contributed to the positive results. The survey finding that respondents in the intervention sites thought the WSP had become significantly stricter about violations around semi trucks certainly suggests that general deterrence was created by the media and enforcement interventions. The number of citations issued by the WSP as shown earlier is also likely sufficient to support a conclusion that drivers noted a high enforcement level. As with most changes of this type, the likely persistence of the general deterrence effect in the absence of "reminder" enforcement blitzes is unknown.

LESSONS LEARNED

At the last regularly scheduled meeting of the Steering Committee in October 2005, the members discussed how they would have approached this project if they knew when they started what they knew when they finished. By email, in January 2006, the Steering Committee had another chance to read their comments and either change or add additional thoughts. The comments are arranged by topic in no particular order and the authors were promised anonymity.

Planning Process. Partnership with all the agencies on the Steering Committee worked very well. Collective knowledge and collaboration from everyone were important to the success of the project. The partnership between law enforcement and the Washington Trucking Association is unusual and not found in most other states. Important to the success of the pilot project was having all the players at the table all the time. This was a project created and run by committee – the only successful one ever experienced.

Use of three years worth of collision data to choose corridors should have been analyzed, instead of just two. This probably would have yielded the same results but nonetheless would have given a more stable source upon which to base our corridor selections. Law enforcement should have done a run on the intervention corridors before the final length was determined – intervention corridor #2 should have been expanded further south to where the road goes from three lanes to two as that is the location of a lot of aggressive driving violations.

Media/Communications. Market research surveys were key to the success of the TACT pilot project as they told us how people perceived our message. We received complaints from a few members of the public that the radio PSA left the impression that the State Patrol is in cahoots with the trucking industry. There is still a perception by PV drivers that CMV drivers are the ones who are at fault in collisions - the jingle sounded to some listeners as if CMV drivers never violated traffic laws. The PSA should have been more traditional. There is still a perception with the general public that truckers are the main culprits and that they, the truckers, should be getting tickets as well. While this obviously did occur as part of the project, we need to do a better job next time informing the public that any vehicle is subject to a ticket if it behaves unsafely. If this project were done elsewhere, the PSA would need to stand out amid the media clutter but not leave people with the impression that truckers were not being cited too.

Our PSA also did not reflect the participation of local law enforcement. Should have used more local law enforcement in the media – visibility is very important to county sheriffs as they are elected. Most of the news about the TACT pilot project spoke to the efforts of the State Patrol. Nothing was ever said about the locals. This type of publicity is extremely important to the local agencies. All of the players need to bask in the same sunlight. All of the participants should be recognized and publicized for their efforts.

WTSC stepped on the TACT message because they had eight traffic safety campaigns going on at once. The TACT media and communication as well as high visibility enforcement campaign had to compete with other statewide media and high visibility enforcement campaigns.

Should have scheduled the press event away from a holiday [The press event was held on Tuesday, July 5, 2005]. The impact of the campaign kick-off may have been obscured somewhat by having it coincide with the July 4th holiday.

The road signs did the best job of reaching people with a message. Sign fabricators should have been involved from the beginning of the project so the Committee would know what could or could not be made. Locations of the road signs were very good.

Variable message road signs should not be used as they back up traffic on interstates.

Enforcement Plan. Local law enforcement should be involved in preparing the enforcement plan. A police chief or county sheriff should have been on the Steering Committee – someone who wears the uniform – helps motivate the officers. Important to have Steering Committee members at the morning briefings and afternoon de-briefings as it showed participating law enforcement how important the pilot project was.

Enforcement worked well because we have good relationships between the state and local law enforcement. We should have gotten more local law enforcement bodies out during the enforcement period. We could have used more officers for the enforcement period. Needed to lock down the local law enforcement schedule in advance because we needed three people each from each agency to be effective.

Aviation was a really important part of the enforcement process. Aviation was a big part of enforcement.

Three enforcement waves would have been better instead of just two. We should have had a third enforcement wave. Ticket forms should have had a box to check when aircraft called the ticket or two names on the citations. Needed to have a dedicated alternate radio frequency – lost one day to SWAT activity. Officers who gave out the flyer at all traffic stops helped to explain why enforcement was out there and the purpose of the pilot project. We should have varied the hours of enforcement from 6 a.m. to 2 p.m. to try 6-10 a.m. and then 3-6 p.m. The allowance of a third media and enforcement wave would have enhanced the project.

It is very important to ensure that each intervention corridor has someone in authority to make decisions.

Evaluation Process. A project like this needs more than one evaluator – having technical assistance from an independent evaluator was a real asset. The evaluation doesn't need to be as rigorous in states that run this project in the future. We did not have adequate resources to run a state-wide project.

General Comments. Hard to install road signs near the end of the WSDOT fiscal year so those dates need to be taken into consideration when planning the project. Also need to consider WSDOT annual maintenance during the enforcement periods. More time should be given for the planning and development of the Project Action Plan, especially for the in-depth analysis and consideration of transportation work zone projects on selected corridors.

Having two funding sources was a nightmare. Need to identify what we need to purchase at the start. Also had difficulty dealing with three different budget codes. Should identify per diem needs early in the planning process. Had difficulty identifying revenue sources. Had to keep revising the budget. Should have had help with the budget up front.

Reauthorization of the transportation budget bill complicated the project at the NHTSA level.

If other states do this project, it is important to have pre-project groundwork to make sure all the key players in any other state are not just willing to go along but are actively interested in having the project succeed in their state. Committee members from Washington should be called upon by other states planning this type of project – states are sometimes more receptive to hearing about this kind of thing from other state people rather than as proposals from the "feds".

CONCLUSION

The TACT pilot project came to the Washington Traffic Safety Commission because of Congressional concern about the collision rate between passenger vehicles and commercial vehicles on the nation's roadways. Washington State was selected as a pilot project site through a grant from FMCSA and NHTSA, who wanted to test whether the *Click It or Ticket* model (combined media and high visibility enforcement) for safety belt enforcement could work on an unsafe driving around commercial vehicles safety project. Washington State had already run a successful program by the Washington State Patrol that enforced traffic laws on a congested stretch of freeway through Seattle called *Step up and R.I.D.E.*. Because of the success of this project and the reputations of several staff at the Traffic Safety Commission, the pilot project was assigned to Washington.

A Steering Committee was formed to develop the pilot project that included members of FMCSA, NHTSA, FHWA, WTSC, the Washington State Department of Transportation Data Office and Signage Office, the Washington Trucking Association, the Washington State Patrol commercial vehicle division, and the Washington Association of Sheriffs and Police Chiefs. The project was designed and implemented, start to finish, by this Committee.

Initially the Committee recognized that funding was insufficient for a state-wide project so four corridors were selected, two for media and enforcement (intervention corridors) and two that would get neither (control corridors). Dates for enforcement waves were chosen. Driver behaviors were analyzed and "cutting off trucks" was the behavior targeted by the project. Media was selected including posters, flyers, PSA, and road sign design and locations.

Enforcement was conducted in the intervention corridors in two waves for two work weeks (Monday through Friday) in July and September. Law enforcement used the "trooper in a truck" model to ride with volunteers from the trucking industry; they also used both marked and unmarked patrol vehicles and the Washington State Patrol Aviation Unit. Nearly 5,000 tickets were written during these high visibility enforcement periods.

The project was evaluated by several methods pre, during, and post enforcement periods. The evaluation results provided a consistent and conservative picture of the effectiveness of the TACT pilot project. Success was demonstrated at every step—messages were received and understood; knowledge was changed in the intended direction; self-reported behavior improved and observed behavior confirmed the self reports. In conclusion, the TACT pilot project achieved its objectives and thereby improved safety in the intervention corridors.

Finally, the cooperation and hard work of every member of the Steering Committee should not be minimized in evaluating the worth of the TACT pilot project. The good will that developed between state and local law enforcement was an unintended consequence that will certainly assist in future cooperation with other Washington State traffic projects.

References

- Agresti, A. (2002). Categorical Data Analyses. John Wiley & Sons: Hoboken, NJ.
- SPSS (2004). SPSS Advanced Statistics 13.0, SPSS Inc.: Chicago, IL.

Appendix A

Media and Communications

RADIO PSA TEXT

As Produced: 06/22/05
Client: Washington Traffic Safety Commission
Project: Truck Safety Radio
Title: Bandit

RADIO

"Bandit"

(Spoken word song a la Convoy)

Not long ago I was on I-5, well maybe it was one-oh-one,
But it was head-to-toe in the granny lane and I was hauling about twenty-five ton

When a little roller skate with a bright red wrapper, tries to put the hammer down,
He cuts me off and he hits the brakes and I nearly mow him down,

Now you ought to give rigs one car length for every 10 miles per hour,
We need braking room with 18 wheels and 600 ponies of power,

If you cut us off or you ride our tail you'll surely be pressing yer luck,
You see Smokey is a friend of mine, and the ticket is a hundred, one bucks

Well my ride along, "the man in blue" calls ahead to mama bear,
And that little red rover, he's now pulled over, spending money like a millionaire,

Now a hundred one bucks ain't no chicken feed, but in truth it could be worse,
It's a better price to pay than havin' to ride home in a hearse,

So when you find yourself on the road with trucks, be sure to give us plenty of
room.
Cause extra patrols are going on now, and you might meet a bear real soon, ten-
four.

A message from the Washington Traffic Safety Commission.

AIR BUY DETAILS

WASHINGTON TRAFFIC SAFETY Safety Around Trucks 7/4/05-9/30/05 A18-54 RADIO												
Total reach = 1,137,108 Adults 18-54 Total frequency = 32.5 times (number of times listener heard the spot)												
STATION	STATION REACH	FREQ	# OF PD SPOTS ORDERED	GROSS \$	# OF N/C SPOTS ORD	VALUE OF N/C SPOTS ORD	# OF N/C SPOTS AIRED	VALUE OF AIRED SPOTS	WEBSITE VALUE	OTHER VALUE*	ADDED VALUE \$ AMOUNT	PROMOTION INTERVIEW
Seattle - Reached 1,631,108 Adults 18-54 12.8 times												
KIRO-AM	109,300	8.9	69	\$15,150	70	\$11,375	52+		\$3,000	\$500	\$14,875	Ran mentions during traffic updates on 7/5 @ 2p, 3p, 4p, and 6p. Have aircheck.
KMPS-FM	266,400	8.2	94	\$25,050	45	\$8,100			\$6,000	\$4,500	\$18,600	Interview with Don Riggs on Introspect Northwest show on 6/2 with Trooper Ken and Jonna. Have aircheck. Interview on rotated morning show 9/23 with Trooper Ken and Jonna. Have aircheck. Subsidy in midday will do website mention. Had news coverage 1-2x/week for a 3 weeks.
KMTT-FM	161,600	5.8	73	\$9,640	75	\$6,617	56+			\$1,500	\$8,117	Interview with Lee Callahan in the Mountain Magazine show 7/31st 7:30s with Jonna. Have aircheck. Done.
KOMO-AM	86,700	8.7	80	\$14,800	80	\$10,000	35+			\$500	\$10,500	A feature ran 7/5 on the hour 5a-12mid (excluding Mariner blackout 4p-6:30p) plus the on-air talent teased the story on 9p-cards. Could not get aircheck.
KPLZ-FM	178,600	5.7	99	\$6,890	78	\$4,680	74+ (6x overnights)		\$3,000	\$1,900	\$10,380	Interview with Kent and Allan 9:00a 7/8. Have aircheck. Done.
KRWM-FM	169,300	7.1	78	\$12,600	51	\$3,420	8+		\$6,000	\$1,650	\$11,100	Interview with Kate Daniels on Sunday Morning Magazine 8/2 at 11:30am, 30 min. produced show on KKNV, KVVZ, and KRVM. Also running 14x 10 Sun 6a-7p. Have aircheck. Done.
KWJZ-FM	117,000	6.4	47	\$7,990	47	\$7,990	12+		\$3,000	\$1,280	\$12,270	Interview with Kate Daniels on Sunday Morning Magazine 8/2 at 11:30am, 30 min. produced show on KKNV, KVVZ, and KRVM. Also running 14x 10 Sun 6a-7p. Have aircheck. Done.
Bellingham - Reached 42,800 Adults 18-54 77.2 times												
KAFE-FM	14,100	31.0	285	\$17,575	468	\$10,560	278+		\$6,500		\$17,060	Logo in STAR club section 7/7-8/30 Hits 40,500/month
KGMI-FM	13,200	31.7	285	\$14,725	468	\$9,960	278+		\$6,500	\$500	\$16,960	Logo on business directory page 7/11 9:00 Hits 131,750/month
KISM-FM	10,800	28.6	285	\$15,200	468	\$9,960	278+		\$6,500		\$16,460	Logo on website on "cool link" 7/11-9/30 Hits 131,750/month
KWPZ-FM	5,000	28.0	259	\$14,245	259	\$14,245	180				\$14,245	
Olympia - Reached 113,200 Adults 18-54 8.9 times												
KGY-FM	1,000	19.3	200	\$8,550	280	\$8,550	213+			\$8,550		
KXXO-FM	10,300	26.1	285	\$12,825	285	\$12,825	287+			\$200	\$13,025	Message from WTSC during traffic report, does not know how many times they will run.
KFMY-FM	5,000	1.7	285	\$8,360	285	\$8,360	220+				\$8,360	
KRXY-FM	2,700	21.4	285	\$8,835	285	\$8,835	405				\$8,835	
TOTALS			2,789	\$194,425	3,244	\$136,677		\$12,555			\$195,057	89% Percentage of bonus to paid
*OTHER VALUE = VALUE OF INTERVIEWS, PROMOTIONS, ETC.												

FREQUENCY

WASHINGTON TRAFFIC SAFETY Safety Around Trucks 7/4/05-9/30/05 A18-54 RADIO								
Frequency numbers may be higher than listed since \$0 were not figured into the overall frequency number.								
Total reach = 878,840 Adults 18-54 Total frequency = 22 (number of times listener heard the spot)								
STATION	# OF PD SPOTS	GROSS \$ ORDERED	# OF N/C SPOTS ORD	VALUE OF N/C SPOTS ORD	WEBSITE VALUE	OTHER VALUE*	ADDED VALUE \$ AMOUNT	
Seattle - Reached 828,440 Adults 18-54 5.3 times								
KIRO-AM	25	\$5,525	30	\$4,875	\$3,000		\$7,875	Yes, when they do what airs will be separate from what they contract to do, due to talent fees
KMPS-FM	40	\$10,670	15	\$2,700	\$6,000	\$4,000	\$12,700	No
KMTT-FM	52	\$7,230	46	\$4,941			\$4,941	Yes, when they do what airs will be separate from what they contract to do, due to talent fees
KOMO-AM	30	\$5,550	30	\$3,750			\$3,750	Yes, not free
KPLZ-FM	66	\$5,920	38	\$2,865	\$3,000		\$5,865	No
KRWM-FM	52	\$8,400	34	\$2,280	\$6,000	\$1,400	\$9,680	No
KWJZ-FM	35	\$5,950	35	\$5,950	\$3,000		\$8,950	No, when they do what airs will be separate from what they contract to do, due to talent fees
Bellingham - Reached 36,800 Adults 18-54 35.4 times								
KAFE-FM	285	\$17,575	468	\$10,560	\$6,500		\$17,060	No
KGMI-FM	285	\$14,725	468	\$9,960	\$6,500	\$500	\$16,960	No
KISM-FM	285	\$15,200	468	\$9,960	\$6,500		\$16,460	No
KWPZ-FM	259	\$14,245	259	\$14,245			\$14,245	No
Olympia - Reached 13,600 Adults 18-54 25.4 times								
KGY-FM	280	\$8,550	280	\$8,550			\$8,550	
KXXO-FM	285	\$12,825	285	\$12,825		\$200	\$13,025	No, but can launch audio via a banner click \$500/qtr.
KFMY-FM	285	\$8,360	285	\$8,360			\$8,360	
KRXY-FM	285	\$8,835	285	\$8,835			\$8,835	Yes
TOTALS	2,549	\$149,560	3,026	\$110,656			\$157,256	
*OTHER VALUE = VALUE OF INTERVIEWS, PROMOTIONS, ETC.								
105% Percentage of bonus to paid								

PRINT ADVERTISEMENT

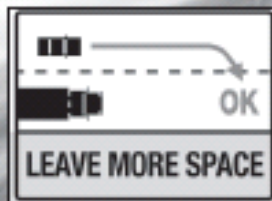
LEAVE MORE SPACE FOR TRUCKS

Big trucks need big space to maneuver and stop in emergencies. Leaving more space for trucks will not only help save lives and reduce injuries, it could save you from getting a ticket.

Numerous government agencies are collaborating on a major law enforcement project with the goal of reducing collisions involving big trucks and smaller vehicles. State troopers will be riding in decoy semi trucks and calling ahead to other law enforcement when they see cars driving aggressively around big trucks.

Speeders, tailgaters, people who cut off semi trucks and aggressive drivers will be ticketed.

So please remember: leave big trucks big space.



DON'T GET A TICKET

A message from the Washington Traffic Safety Commission

www.wtsc.wa.gov

PHOTO OF PRESS EVENT



LETTERS-TO-THE-EDITOR JANUARY 2006

The Daily Olympian 12/22/05

Opinion

4-5464

YOUR VIEWS ■ LETTERS TO THE EDITOR

Truckers aren't the problem on highways

It's hard to read letters to the editor from readers like Frank Jones regarding trucks and keep from just laughing at his exaggerations and misinformation.

It's a given some truckers do tailgate and fail to signal lane changes, but at 75 to 80 miles per hour? Let's be real. Isn't Jones stretching it a little?

Amnesty by the State Patrol for truckers? Jones must have an uncanny sense of timing since troopers jump on trucks for anything they witness. There are numerous speed limit signs pertaining to truck speed limits.

The closest state with right-lane-only laws for trucks is California, and that is not in metro areas. Washington's lane law for trucks keeps us from the left lane in three-or-more-lane sections of highway. The right lane is the most dangerous for us in metro areas due to constant exiting and entering from other vehicles.

I use the second lane from Tumwater to Everett legally and safely to avoid people who can't comprehend merging or exiting safely. Technically, the left lane is for passing only for ALL VEHICLES, not just trucks.

Jones needs to get his facts straight and not embellish his story. If the general public was as safe as 95 percent of the truckers, the highways would be a lot safer.

Bob Stewart, Lacey

The Daily Olympian 11/30/2005 2

Why aren't truck drivers held accountable?

So I pass by multiple highway signs on Interstate 5 every day telling me that I risk getting a ticket if I don't leave enough space when passing a truck.

I even hear jingles about it on the radio which say, "Smokey is a friend of mine."

My question is this: What is the Washington State Patrol doing to protect us four-wheelers from aggressive truckers that tailgate within a few feet of our rear bumper?

I think that the same physics are in play, with one major difference — truckers can pretty much do this with impunity as long as they do not decide to tailgate a Crown Victoria (pick your favorite color) with a searchlight on the driver's side.

Where are the added patrols to address this?

Ed Groden, Tumwater

The Daily Olympian 12/9/2005 ↓

Truckers are guilty of tailgating

I share letter writer Ed Groden's frustration with the inconsiderate drivers of 18-wheelers and the lack of response by the Washington State Patrol.

So often I have looked in my rear-view mirror to see only the grill of a big rig, too close to even get a glimpse of the windshield or wheels. Many miles may be driven before I am forced to change lanes only to see the same trucker climb up on the bumper of the car that was in front of me.

Worst of all, state troopers are sometimes in the vicinity, and not yet have I seen a truck driver stopped for it.

In hopes of a remedy, when I notice extremely rude and unsafe driving practices, I report it first to 9-1-1. After I have made that call, I contact the company the driver works for and report it to them as well. It is important to note the license plate and fleet number, as well as time and location of the occurrence. The companies have very strict guide-

TACOMA News Tribune 8/2/2005

TRUCKS
Big rigs should also observe rules of the road

Re: "Better give that 18-wheeler more room" (TNT, 7-29).

It's just as important for trucks to follow the same rules when it comes to passing passenger vehicles. In the past two days alone, I have been nearly creamed (quite literally in one case) by a milk tanker and an empty car carrier.

If a cop wants to ride with me in the mornings and evenings to keep tabs on truckers, I would be more than pleased to let him see things from my perspective.

LANCE ATCHLEY
Olympia

TELEVISION STATIONS THAT CARRIED THE STORY

Television news coverage of the project has been extensive. There are seven commercial television stations in the project areas; they carried all carried the story, some of them numerous times.

Bellingham:

KVOS T.V. – three stories (all aired twice)

Seattle:

KING T.V. the story aired on three separate dates, a total of five times.

Northwest Cable News – one story aired twice.

KONG T.V. – one story aired two times.

KOMO T.V. -- Two stories aired a total of five times.

KIRO T.V. -- One story aired twice.

KCPQ – one story aired once.

Portland:

KATU T.V. – one story aired two times.

RADIO COVERAGE

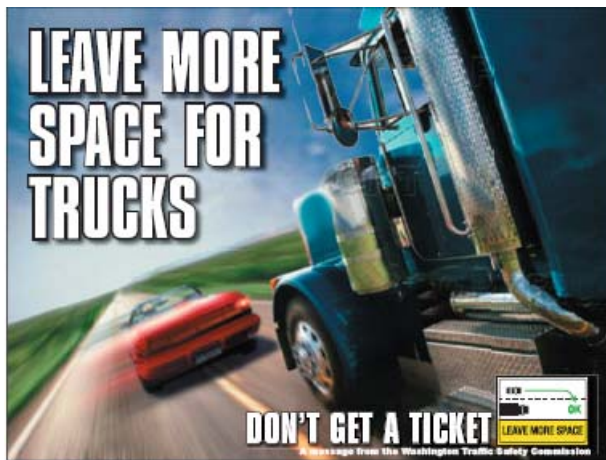
The radio news coverage was most extensive and included:

- 16 radio stations (10 of them in Seattle) aired news stories about the project.
- Extra coverage included live, on-air interviews (KMPS, KXXO, KMTT and KGMI).
- Extra coverage also included a 30-minute long public affairs program that aired on four Seattle stations (KWJZ, KKNW, KLSY, and KRWM).
- The most extensive reach of any one radio interview was an interview of Lowell Porter, WTSC Director, on satellite radio (XM radio) reaching 5 million subscribers, many of them truckers.
- Radio stations carrying the story include:
 - In Seattle: KIRO, KOMO, KMTT, KPLZ, KMPS, KIXI, KWJZ, KKNW, KLSY, and KRWM.
 - In Olympia: KGY and KXXO (both carried the story on two separate occasions).
 - In Skagit and Whatcom counties: KABS, KRBC, and KGMI radio.

ROAD SIGN



POSTERS, BANNERS, AND FLYERS



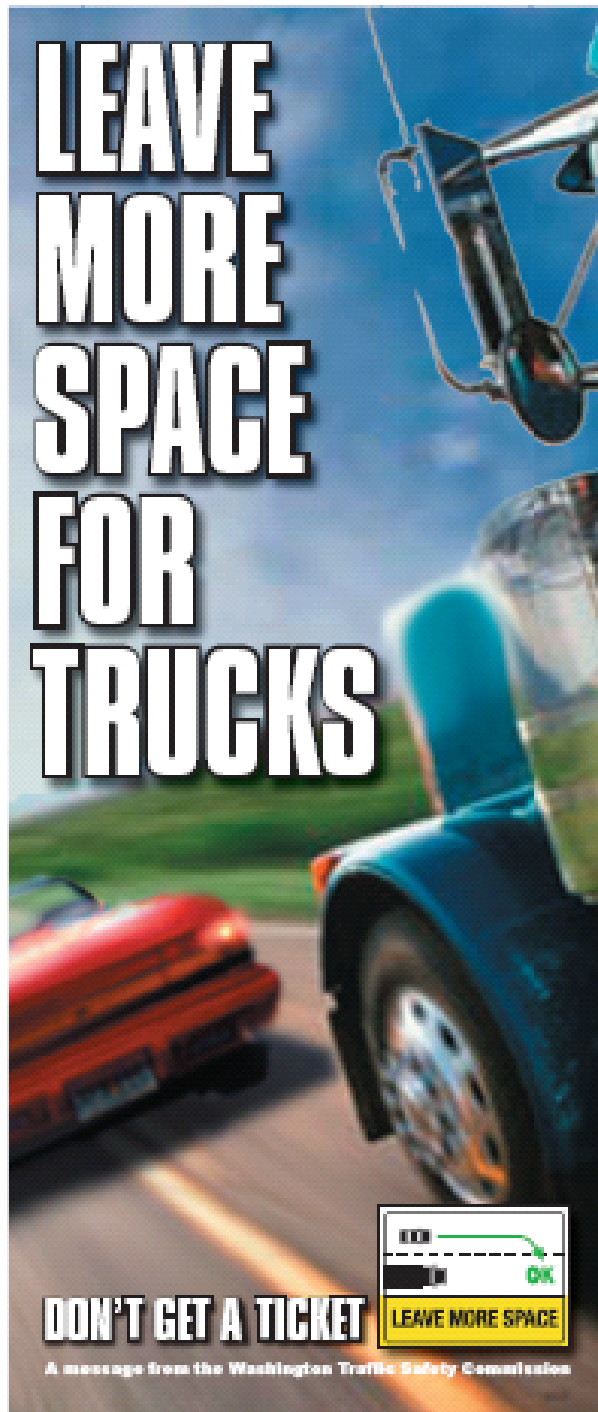
POSTER

BANNERS



[BANNER 5' x 90']





LEAVE MORE SPACE FOR TRUCKS

DON'T GET A TICKET

A message from the Washington Traffic Safety Commission

THE WASHINGTON STATE TACT PROJECT

Ticketing Aggressive Cars & Trucks

When cars and semi-trucks collide, cars get the brunt of it, no matter which vehicle is at fault. Over the last ten years, 3 out of 4 people who died in these collisions were riding in passenger cars.

Semi-trucks need at least twice the time and room to stop as cars.

Law enforcement is stopping people who drive unsafely around semi-trucks, whether the person is driving a car or a semi-truck.

What to do to avoid getting a ticket:

- **Don't out off semi-trucks.** For safety, one car length for every 10 miles per hour of speed is recommended.
- **Don't tailgate.** Unlike cars, semi-trucks have big blind spots behind them. Also, car drivers who tailgate semi-trucks can't see traffic ahead. If the semi-truck brakes suddenly, you have no time to react and no place to go.
- **Don't speed.** Last year, speeding caused one out of every 4 car/semi-truck collisions in Washington.
- **Allow semi-trucks plenty of room.** Be careful when you or the semi-truck are entering a highway or merging with traffic.

For further information, contact the Washington Traffic Safety Commission at 360.753.6197



DON'T GET A TICKET

A message from the Washington Traffic Safety Commission

PRESENTATIONS

- Whatcom County Traffic Safety Task Force Meeting (speaker: Jonna VanDyk)
- Thurston County DUI Task Force Meeting (speaker: Jonna VanDyk)
- Statewide Community Traffic Safety Task Force Coordinators (speaker: Jonna VanDyk)
- Washington State Patrol statewide meeting of public information officers (speaker: Jonna VanDyk)
- Whatcom County Sheriff and Police Chiefs meeting (speaker: Jerry Amato)
- Washington Association of Sheriffs and Police Chiefs Conference (speaker: Penny Nerup)
- Washington Trucking Associations annual conference (speaker: Jonna VanDyk)
- The Oregon Child Passenger Safety Teams Conference (speaker: Rosemary Nye)
- The Conference of Western Regional Administrators OFMCS (speaker: Jerry Amato)
- The Washington Department of Transportation statewide safety conference (speaker: Rosemary Nye)
- The Federal Highway Administration National Conference (speaker: Don Peterson)
- Washington Governor Christine Gregoire's GMAP meeting of executive cabinet directors (speaker: Steve Lind)
- The Governor's Conference on Safety and Health (speaker: Trooper Rod Sharpe)

Appendix B

Citation Data

CITATION DATA - SUMMARY OF BOTH ENFORCEMENT WAVES

Corridor		
	Frequency	Percent
south corridor	1,869	39.5
north corridor	2,268	47.9
Total	4,137	87.3
MISSING	600	12.7
Total	4,737	100.0

Residence		
	Frequency	Percent
other states	694	14.7
western wa	1,060	22.4
eastern wa	40	0.8
Canada	597	12.6
north corridor	1,338	28.2
south corridor	1,007	21.3
Total	4,736	100.0
MISSING	1	0.0
Total	4,737	100.0

Date		
	Frequency	Percent
7/11/2005	140	3.0

Date cont.		
	Frequency	Percent
7/12/2005	206	4.3
7/13/2005	258	5.4
7/14/2005	258	5.4
7/15/2005	260	5.5
7/18/2005	210	4.4
7/19/2005	232	4.9
7/20/2005	265	5.6
7/21/2005	261	5.5
7/22/2005	222	4.7
9/19/2005	249	5.3
9/20/2005	258	5.4
9/21/2005	263	5.6
9/22/2005	238	5.0
9/23/2005	251	5.3
9/26/2005	235	5.0
9/27/2005	258	5.4
9/28/2005	266	5.6
9/29/2005	180	3.8
9/30/2005	227	4.8
Total	4,737	100.0

Time

	Frequency	Percent
5	29	0.6
6	546	11.5
7	790	16.7
8	666	14.1
9	631	13.3
10	444	9.4
11	371	7.8
12	577	12.2
13	542	11.4
14	60	1.3
15	13	0.3
Total	4,669	98.6
MISSING	68	1.4
Total	4,737	100.0

Wave

	Frequency	Percent
FIRST WAVE	2,312	48.8
SECOND WAVE	2,425	51.2
Total	4,737	100.0

Ticket/Warning

	Frequency	Percent
TICKET	3,422	72.2
WARNING	1,315	27.8
Total	4,737	100.0

Marked/Unmarked

	Frequency	Percent
MARKED	1,632	34.5
UNMARKED	1,703	36.0
UNK	1,401	29.6
MISSING	1	0.0
Total	4,737	100.0

Commercial/Passenger

	Frequency	Percent
COMMERCIAL	646	13.6
PASSENGER	4,079	86.1
Total	4,725	99.7
MISSING	12	0.3
Total	4,737	100.0

Gender

	Frequency	Percent
FEMALE	1,253	26.5
MALE	3,471	73.3
Total	4,724	99.7
MISSING	13	0.3
Total	4,737	100.0

Age

	Frequency	Percent
14.00	1	0.0
16.00	4	0.1
17.00	15	0.3
18.00	59	1.2
19.00	104	2.2
20.00	124	2.6
21.00	118	2.5
22.00	139	2.9
23.00	138	2.9
24.00	153	3.2
25.00	127	2.7
26.00	129	2.7
27.00	130	2.7
28.00	120	2.5
29.00	126	2.7
30.00	109	2.3
31.00	105	2.2
32.00	101	2.1
33.00	122	2.6
34.00	143	3.0
35.00	125	2.6
36.00	111	2.3
37.00	98	2.1
38.00	116	2.4
39.00	97	2.0
40.00	111	2.3
41.00	120	2.5
42.00	103	2.2
43.00	101	2.1
44.00	112	2.4
45.00	118	2.5
46.00	93	2.0
47.00	108	2.3
48.00	81	1.7
49.00	88	1.9
50.00	94	2.0
51.00	97	2.0
52.00	91	1.9
53.00	75	1.6
54.00	70	1.5

55.00	59	1.2
56.00	52	1.1
57.00	53	1.1
58.00	53	1.1
59.00	44	0.9
60.00	38	0.8
61.00	40	0.8
62.00	41	0.9
63.00	39	0.8
64.00	27	0.6
65.00	24	0.5
66.00	24	0.5
67.00	22	0.5
68.00	14	0.3
69.00	10	0.2
70.00	14	0.3
71.00	11	0.2
72.00	6	0.1
73.00	6	0.1
74.00	8	0.2
75.00	9	0.2
76.00	5	0.1
77.00	9	0.2
78.00	4	0.1
79.00	4	0.1
80.00	5	0.1
81.00	2	0.0
82.00	2	0.0
83.00	1	0.0
85.00	2	0.0
86.00	1	0.0
87.00	1	0.0
89.00	1	0.0
93.00	1	0.0
Total	4,708	99.4
MISSING	29	0.6
Total	4,737	100.0

Appendix C
Exposure and Knowledge survey form

This Department of Licensing office is assisting the Washington Traffic Safety Commission in a study about highway safety in Washington. Your answers to the following questions are voluntary and anonymous. Please complete the survey and then put it in the drop box or hand it back to the agent

1. Your sex: ☐ Male ☐ Female 2. Your Zip Code: _____
3. Your age: ☐ Under 21 ☐ 21-25 ☐ 26-39 ☐ 40-49 ☐ 50-59 ☐ 60 Plus
4. Your race: ☐ White ☐ Black ☐ Asian ☐ Native American ☐ Other
5. Are you of Spanish/Hispanic origin? ☐ Yes ☐ No
6. About how many miles did you drive last year?
 ☐ Less than 5,000 ☐ 5,000 to 10,000 ☐ 10,001 to 15,000 ☐ More than 15,000
7. What type of vehicle do you drive most often?
 ☐ Passenger car ☐ Pickup truck ☐ Semi truck ☐ Sport utility vehicle ☐ Mini-van ☐ Full-van ☐ Other
8. How often do you use seat belts when you drive or ride in a car, van, sport utility vehicle or pick up?
 ☐ Always ☐ Nearly always ☐ Sometimes ☐ Seldom ☐ Never
9. Have you ever driven a truck?
 ☐ Never ☐ A few times total ☐ Used to drive a truck regularly ☐ Drive trucks now
10. In the past two months, have you changed your driving behavior around trucks?
 ☐ Yes
 If yes, what did you change? (Check all that apply):
 ☐ I leave more space when passing ☐ I don't follow as closely ☐ I stay out of the truck driver's blind spots
 ☐ Other _____
 ☐ No
11. How strictly do you think the Washington State Patrol enforces unsafe driving acts around trucks?
 ☐ Very strictly ☐ Somewhat strictly ☐ Not very strictly ☐ Rarely ☐ Not at all
12. Have you ever been stopped by the police for tailgating or cutting off a semi truck?
 ☐ Yes, I got a ticket ☐ Yes, I got a warning ☐ No
- For Questions 13 and 14, please answer in either feet or car lengths but not both***
13. When I pass a car on an interstate highway, I leave _____ feet or _____ car lengths before I pull back in.
14. When I pass a semi truck on an interstate highway, I leave _____ feet or _____ car lengths before I pull back in.
15. Have you recently read, seen or heard anything about giving semi trucks more space when you pass them?
 ☐ Yes
 If yes, where did you see or hear about it? (Check all that apply):
 ☐ Newspaper ☐ Radio ☐ TV ☐ Road sign ☐ Brochure ☐ Police ☐ Billboard ☐ Poster ☐ Banner
 If yes, what did it say? _____
 ☐ No
16. Do you know the name of any programs related to safety around semi trucks in Washington? (check all that apply):

9 Share the Road 9 Click It or Ticket 9 TACT 9 Give Big Rigs Big Space 9 Leave Room When Passing

Appendix D
DVD Rating Instructions/DVD Rating Form

Washington Traffic Safety Commission
TACT pilot project

Instructions for DVD Raters

Thank you for agreeing to help the TACT pilot project by rating interactions between semi trucks and other vehicles. This rater's kit includes a DVD and a set of sheets for your responses. Please keep them together and return them as a unit when you are done.

The DVD contains 99 scenes of interactions between a ***designated vehicle***, marked by a yellow arrow (↖) at the opening of the scene, and a semi truck (tractor-trailer, pole truck, tanker truck, etc.) in front of the camera car. **Please note that the *designated vehicle* may be any vehicle type including a semi truck.** Therefore, you may be rating a semi truck as the ***designated vehicle*** interacting with another semi truck.

The DVD menus have scenes numbered from 1 to 99 in groups of 25, and this book contains a separate numbered sheet for each scene. There are also several blank response sheets at the back of the book that you can use if one of the response forms is missing or damaged. In this case, please be sure to write your rater number (from the front of the book) and the scene number you are rating at the top of the blank form.

Please rate the scenes in numerical order from 1 to 99. You may start and stop rating as many times as you want, but **please do not confer with anyone about your ratings.** A few Post-It notes have been included in the book for you to use as place markers when you take breaks.

Inserting the DVD will take you to the main menu. It contains four choices—Scenes 1-25, Scenes 26-50, Scenes 51-75 and Scenes 76-99. Clicking on one of these choices will open another menu with the individual scene numbers and a choice to return to the Main Menu.

To play a scene, just click on the number of the scene (with the mouse if you're using a computer or the remote if it's a DVD player) and the scene will start. At the end of the scene, you will be returned to the sub-menu that includes that scene number. **It is OK to watch a scene more than once.** However, once you complete rating a scene, move on to the next highest numbered scene. **Do not go back and re-rate an earlier scene.**

The response form is the same for each scene and consists of 10 items. The first seven items relate to the behavior of the driver of the ***designated vehicle*** (the vehicle identified with the yellow arrow). The last three items address the behavior of the driver of the semi truck.

In items 1-4, please circle the number on each dimension that best indicates how close your assessment is to the concepts at each end of the five-point scale. For

example, if you were asked how much you liked chocolate ice cream and you liked it, but it is not your favorite, you might select a “4” on the following scale and circle it as follows:

Hate it 1 2 3 4 5 Love it

The four dimensions in the scales in questions 1-4 are:

- Low crash risk/High crash risk – What is the likelihood that the behavior of the driver of the **designated vehicle** could result in a crash between his vehicle and the semi truck, or among any other vehicles in the scene?
- Unintentional/Intentional – To what extent did the driver of the **designated vehicle** plan to act as shown, or were his behaviors forced by some outside factor (i.e. by other drivers, roadway design, etc.)?
- Legal/Illegal – To what extent was the behavior of the driver of the **designated vehicle** legal or illegal?
- Defensive/Intimidating – To what extent was the driver of the **designated vehicle** acting in a defensive/self-protective or intimidating manner?

For Questions 5, 6 and 7, please mark an “X” or a ✓ for the **one** category that best expresses your opinion with respect to the driver of the **designated vehicle** after you view the scene.

For Questions 8, 9 and 10, please mark an “X” or a ✓ for the **one** category that best expresses your opinion with respect to the driver of the **semi truck** after you view the scene.

There are no wrong or right answers. We want your impressions based on the information that is available in the scenes. We know that some of them may be hard to see because of weather, lighting or the camera angle. Please do your best. We would prefer that you provided a rating on each item for each scene and did not leave anything blank. Just give your best impression from the available information.

If you have any additional comments on a scene, please write them directly on the form or on the back if you need extra room.

When you have completed your ratings of the 99 scenes, please return the entire rating package to:

Dr. Philip Salzberg
Research Director
Washington Traffic Safety Commission
1000 S. Cherry Street
P.O. Box 40944

Olympia, WA 98504

We would appreciate receiving your ratings by January 4, 2006.

Many Thanks!

Before Starting

Please check which group of raters you are affiliated with:

Washington Patrol _____

Trucking Association _____

WTSC _____

DVD Rating Form

Rater #1

Scene 1

In this section you will be evaluating the behavior of the **designated vehicle's** driver.

Circle the number between each word pair that you believe best describes the behavior of the designated vehicle's driver.

- | | | | | | | |
|-------------------|---|---|---|---|---|-----------------|
| 1. Low crash risk | 1 | 2 | 3 | 4 | 5 | High crash risk |
| 2. Unintentional | 1 | 2 | 3 | 4 | 5 | Intentional |
| 3. Legal | 1 | 2 | 3 | 4 | 5 | Illegal |
| 4. Defensive | 1 | 2 | 3 | 4 | 5 | Intimidating |

5. Which of the following best summarizes the behavior of the designated vehicle's driver?

Select one.

Not a problem

Suffered a lapse; a minor attention or vehicle handling problem

Committed an error; a failure of planned action to achieve an intended outcome

Committed a violation; deliberately performed unsafe/illegal driving behavior

6. Would you characterize the designated vehicle's driver as aggressive? Select one.

Definitely _____ Probably _____ Probably not _____ Definitely not

7. Should a police officer stop the designated vehicle's driver? Select one. Yes

_____ No _____

In this section you will be evaluating the behavior of the **semi truck's** driver.

8. Which of the following best summarizes the behavior of the semi truck's driver? Select one.

Not a problem

Suffered a lapse; a minor attention or vehicle handling problem

Committed an error; a failure of planned action to achieve an intended outcome

Committed a violation; deliberately performed unsafe/illegal driving behavior

9. Would you characterize the semi truck's driver as aggressive? Select one.

Definitely _____ Probably _____ Probably not _____ Definitely not

10. Should a police officer stop the semi truck that was involved? Select one. Yes
_____ No _____

Appendix E
Intercept Survey Form

TACT Rest Area Intercept Survey

Sampling

Kelso rest area (control corridor #1) for southbound traffic at approx milepost 54 (Toutle River rest area).

Maytown rest area (near intervention corridor #2) for southbound traffic at approx milepost 91.

Sample 100 **Southbound** drivers at each location.

Recruiter Questions

- Are you a licensed driver? *If not, terminate the recruitment.*
- Are you a Washington resident? *If not, terminate the recruitment.*
- What type of vehicle do you drive most often on I-5? *If large truck, terminate the recruitment.*

Survey Questions

- Standard opening identifying WTSC and purpose of the survey

Read all response options except where noted

1. In what city do you live? _____
2. Where did you start your trip on I-5 that brought you to this rest area? _____
3. Where do you plan to exit I-5 on this trip?

4. How often do you drive on I-5 in the Olympia area?
Daily ____ Weekly ____ Monthly ____ Other (*Specify*) _____
5. What type of vehicle are you driving today?
Car ____ Pickup ____ SUV ____ Van ____ Large truck ____
Other _____
6. How often do you watch Seattle TV stations? _____
7. How often do you listen to radio stations from Olympia/Seattle?

8. Since last summer, would you say the Washington State Patrol enforcement of speeding on I-5 is:

Less ____ About the same ____ Greater ____

9. Since last summer, would you say the State Patrol's enforcement of driving violations around semi-trucks (such as not leaving enough room when you pass) is:

Less ____ About the same ____ Greater ____

10. Have you seen or heard any of these messages on radio or TV since last summer:

a. "Give big rigs more space" Yes ____ No ____

b. "Tickets are 101 bucks for cutting off a truck" Yes ____ No ____

c. "There are extra troopers out enforcing the rules around trucks" Yes ____ No ____

11. Have you seen this road sign? (**Show picture of sign**) Yes ____ No ____

If Yes:

12. Where did you see it? (**Do not read responses**)

I-5 in Olympia area ____ I-5 in Bellingham / Mt. Vernon area ____

On the side of a truck/trailer ____

Other (*specify*) _____

13. How many times have you seen the sign in the last 3 months?

(Estimate, do not ask)

• Male ____ Female ____

Age Under 21 ____ 21-39 ____ 40-59 ____ 60 Plus ____